PANEL PILOT ACE DESIGN STUDIO USER MANUAL

Quick guide using PanelPilotACE Design Studio to start designing a customised display

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PanelPilotACE Design Studio

Target System Requirements

- Minimum Operating System: Windows XP SP3, or Windows Server 2003 SP2 (not tested on Windows Servers)
- CPU: x86 AMD64
- RAM: 512 MB
- Hard disk: 200 MB free space
- Minimum Screen Resolution: 1152x800
- Network: Not required
- USB Port: at least 1 free USB 2.0 (or above) Port
- Administrator privilege to install the application
- Key board and Mouse

Getting Started

Starting Panel Pilot ACE

PanelPilotACE Design Studio provides user with two windows one is the PanelPilotACE Home Window and PanelPilotACE Design Window.

Each time you open PanelPilotACE Design Studio you are taken directly to the Home Window which gives quick information on Recent Projects, Project templates and getting started information with tutorial videos.

The projects designed in design studio can be directly opened by double clicking the project file. The project is opened in the design studio and you are directly taken to the designer window which provides the user with all the tools for designing the project.

Working with projects

Design studio project specifies the files, folders, and image resources that make up the project. A project is stored in a folder and is made up of,

- Images: A folder that stores all the images used in designing the project.
- Project: A file with project name followed by a ppproj extension.
- Preview image: A preview (.png) file that stores the project's default screen image.

PanelPilotACE Design Studio is a Multiple Document Interface (MDI), it supports working on multiple project files. Features supported are,

- Multiple project files can be opened in Design Studio.
- Multiple project files can be saved with Save All option.
- Multiple project files can be closed with Close All option.
- User can use the project elements from another open project in the Design Studio to any other open project in the Design Studio (using copy and paste actions on elements).
- Screen from an open project in Design Studio can be copied to another project in Design Studio (using copy and paste actions on screen).

Using Projects

Project Properties

A project is designed using screen/screens. Project is associated with the device model it is designed for. Project properties that can be configured are,

- **Project Name:** This sets the name of the project and the project name is valid if it satisfies the following validator conditions,

  The project's identifier name must have at least 2 characters and cannot have more than 248 characters.

  Only the following characters are allowed:

  'a' to 'z', 'A' to 'Z', '0' to '9', ' ' (Space), '~', '`', '!', '@', '#', '$', '%', '&', '"', '(', ')', '-', '_', '+', '=', '{', '}', '[', ']', ',', '.'

  The name cannot start with space or '.', and the following keywords are reserved (case insensitive):

  AUX, COM1, COM2, COM3, COM4, COM5, COM6, COM7, COM8, COM9, CON, LPT1, LPT2, LPT3, LPT4, LPT5, LPT6, LPT7, LPT8, LPT9, NUL, PRN

  For example, identifier name "aux" is not allowed, and "aux.project" is also not allowed. But "aux_project" and "project.aux" are allowed.

- **Device Model:** This is a read only property, displays the model of the device for which this project is designed.
- **Display Brightness:** The display brightness of the device can be set here.
- **Device Screen Size:** The device screen size is a read only property; this is set with the initial device configuration, related to the device model.
- **Analogue Input Channels:** This is a read only property and is set with the device configuration, related to the device model.

- **Alarm output Channels:** This is a read only property and is set with the device configuration, related to the device model.
- **PWM Output Channels:** This is a read only property and is set with the device configuration, related to the device model.
- **Digital Input/output Channels:** The number of digital input/output channels available is set with the device configuration, related to the device model. The signal type of these channels can be set.
    - Signal Type configured to Input: Function elements that use input signal type - Digital Channel Indicator.
    - Signal Type configure to Output: Function elements that use output signal type - Switch, Switch with Indicator, Digital Output Controller.
- **Default Screen:** Project's default screen can be set here. Default screen is the first screen to be loaded on to the device display screen.

    To set default screen for a project, do one of the following,

    - Project browser, click project , change the default screen property in the property editor
    - Project browser, right click the screen and select set as default screen option provided in the context menu.

    Note: Default screen in the project browser is always indicated in bold fonts.

Creating a New Project

This tutorial guides you through the process of creating a new project in PPACE Design Studio. (Design Window)

To create a new project in design studio, do one of the following:

- Click the New Project Button on the toolbar.
- Press Ctrl + N.
- On File Menu, click New.

Any of these steps launches the New Project dialogue box, from which you can select the project that you want to create.

The New Project Dialogue,

- Once the New Project Dialogue opens user can change the project name and also the storage path for the created project files.
- User can select the Device Model for the project to be designed.
- An option is provided to remember the Device Model and the project path as default Project location; this is the default Device Model and path set in for new project action.

    The new project thus created has an empty screen for the user to start designing the project.

Using Templates to create the New Project

Your project templates are listed in the Home Window Templates tab. For more information, see Basing New Projects on Templates

Opening projects

To open an existing PanelPilotACE project, do one of the following,

- Click the open project button on the toolbar.
- On the File menu, click open. In the open dialogue box, navigate to the project file (Multiple files can be opened in Design Studio).
- Press Ctrl + O.
- Click the File Menu, Recent projects and click on the recently opened project link provided in the list or PanelPilotACE Home Window , recent projects tab.
- Double-click a project file (.ppproj) on the desktop or in Windows Explorer.
- Drag-and-Drop the project file (.ppproj) from the desktop or from Windows Explorer on to the project browser provided in the Design Window (Multiple project files are supported for Drag-and-Drop).

With the exception of clicking a specific file or file link and Drag-and-Drop, all of the above options launch the Open dialogue box, which enables you to browse to your project file.

Saving Projects

To save the current working projects in PanelPilotACE Design Studio, do one of the following,

- Click the Save project button on the toolbar.
- On the File menu, click save (single project) / save all (multiple projects).
- Press Ctrl + S.
- Save option provided in the context menu for the project in the project browser.

Saving the project with a new name and location

To save the current working project in PanelPilotACE Design Studio, do one of the following,

- Click the Save As project button on the toolbar, In the Save As Project Dialogue enter the new name and location for new the project file.
- On File menu, click Save As.

- Save As option provided in the context menu for the project in the project browser.

  This option provides the user an option to save the current working project with a new name and location and start working on this newly created file, it will close the current working project.

Saving a copy of the project

To save a copy of the current working project in PanelPilotACE Design Studio, do one of the following,

- Click Save Copy As button on the toolbar, in the Save Copy As dialogue enter the new name and location of the new project file.
- On File menu, click Save Copy As.
- Save Copy As option provided in the context menu for the project in the project browser.

  This option provides the user an option to save the copy of current working project with a new name and location and continue working on the current working project.

Validate Project

To validate the current working project in PanelPilotACE Design Studio, do one of the following,

- On the File menu, click validate.
- Press F4.
- Validate option provided in the context menu for the project in the project browser.

  Validation of the project gives you the information on the validity state of the project. If the project has validation errors this action will display a dialogue box with a list of validation errors. The project can be uploaded to the device if and only if all the validation errors are resolved.

Upload Project

To upload the current working project in PanelPilotACE Design Studio, do one of the following,

- On the File menu, click upload.
- Press F6.
- Upload option provided in the context menu for the project in the project browser.

  Upload project action validates the current project and if the project has no validation errors, upload project dialogue box appears and the once you confirm upload action the project is uploaded to the device. In case of validation errors you have to resolve the issues and then upload action can be performed. For more information on validation errors refer to Errors and Warning.

  Note:

1. The upload action is disabled in the File menu if the device is not connected to the system.
2. F6 pressed when device is inactive/not connected will show up information dialogue asking the user to connect the device to perform this action.

Preview in Emulator

To preview the current working project in PanelPilotACE Design Studio, do one of the following,

- On the File menu, clicks preview.
- Press F5.
- Preview option provided in the context menu for the project in the project browser.

PanelPilotACE Design Studio has an option to preview the designed project on the emulator. Emulator can be used to test the minor changes in the project design and then once the design is complete can be uploaded on to the device for testing. For more information on how to use the emulator view for testing refer PanelPilotACE Emulator Window.

Note:

1. Text Box visual element, font rendering system on the device and PC are different and hence the fonts might not be rendered exactly similar on the preview dialogue/window and the device.

Project Templates

A project template contains the design elements and their default settings that you can use as a starting point when you create a PanelPilotACE project.

Project templates can be,

- System templates
- User templates

System Templates

System templates are the project templates installed with the Design Studio application, for more information on where to find the system templates, follow templates.

User Templates

User templates are project templates created by the user. You can create project templates using any of the projects designed in PanelPilotACE Design Studio.

- Open an existing project in the designer or create a new project.
- On File menu, click Export as Template.
- Export As Template option provided in the context menu for the project in the project browser; in the Export Project Template Dialogue enter the template name and the required details (details will be displayed when the template is selected in the templates), click export and provide the location to store the project template (is saved in a file [template name provided].pptemplate format).

Once the template is exported to a location it can be imported in to the Design Studio to make it available in the application using following options,

- On File Menu, click Import Templates.
- Double click the project template file.
- Drag-and-Drop project template/project templates in to the Design Studio.

Note: In case the Design Studio is busy with any device related action such as upgrade, upload, reboot, the templates may not get added to the Design Studio on performing any of the above actions to import the project templates.

Basing new projects on templates

To save time, you can base multiple projects on a single project template that contains default settings and design elements. You can create a new project using the project templates as base designs follow these steps,

- Browse to the Home Window, Templates.
- Select the type of template System Templates or User Templates.
- Double click the template, in the New Project Dialogue provide the new name and project location.

Note: In case you have not imported any user templates in to the Design Studio, Templates will only display the System Templates and the User Templates tab is not created.

Recent Projects

To open recent project do one of the following,

- On the File menu, click recent projects and select the project link and start designing the project.
- Browse to Home window, click the recent projects tab. Here is the list of recent projects with a preview (default screen image) of its content. Click open on the project to start designing.

Note: In case the recent project selected is not available anymore or is deleted externally, error message is displayed.

Using Screens

Screen Properties

Screen properties that can be configured by the user,

- **Screen name:** This sets name of the screen used in the project.

  The screen's identifier name must have at least 2 characters and cannot have more than 247 characters.

Only the following characters are allowed:

- 'a' to 'z', 'A' to 'Z', '0' to '9', '_'

The first character must be an English alphabet letter, and the following keywords are reserved (case sensitive):

- abstract, alignof, asm, auto, bool, boolean, break, byte, case, catch, char, char16_t, char32_t, class, console, const, const_cast, constexpr, continue, debugger, decltype, default, delete, do, double, dynamic_cast, else, enum, explicit, export, extends, extern, false, final, finally, float, for, friend, function, goto, if, implements, import, in, inline, instanceof, int, interface, let, long, mutable, Math, namespace, native, new, noexcept, nullptr, operator, package, private, protected, public, register, reinterpret_cast, return, short, signed, sizeof, static, static_assert, static_cast, struct, super, switch, synchronized, template, this, thread_local, throw, throws, transient, true, try, typedef, typeid, typename, typeof, union, unsigned, using, var, virtual, void, volatile, wchar_t, while, with, yield

The screen's identifier name must be different from any other screen in the project, any element in this screen and all project variables.

For more information about the reserved words, please visit: https://developer.mozilla.org/docs/Web/JavaScript/Reference/Reserved_Words.

- **Screen Size:** This is a read only property and is set from the device configuration, depends on the device model.
- **Colour:** Set the screen background colour, also provides an option to set the same colour to all the screens used in the project.
- **Orientation:** Set the screen orientation, also provides an option to set the same orientation to all the screens used in the project.

Creating New Screen

To add a new screen to the project go to the Project browser, right click screens, and click add new.

Rename Screen

To rename screen do one of the following,

- Project browser, double click screen, and enter the new name for the screen in the tree view.
- Project browser, right click screen and select rename, and enter the new name for the screen in the tree view.
- Select screen in the project browser, go to property editor that displays the properties of the screen, and enter the new name for the screen in the name field.

Change Screen Order

To change the order of the screens designed for the project, enter the project browser and right click the screen, the context menu provides Move up, Move down options to change its order.

Note: This order need not be the same as the order in which the screens are loaded on the device display; this order can be controlled using other function elements.

Find References

Project browser, right click on the selected screen and click find reference, this gives a list of function elements that use this screen link.

Copy and Paste Screen

To copy screen in to the same project or another project do one of the following,

- Select screen in the project browser, right click and click copy and paste it in required project.
- Select screen in the project browser press Ctrl + c and then press Ctrl + v in the required project.

Using Project Variables

Project variables are added to the project and they are used as global storage entities which can be used throughout the project. Project variables are of three different types,

- Boolean Variable
- Number Variable
- String Variable
- Colour Variable

  All variable types are provided with an initial value property; configure the initial value for the project variables.

  All variable types are provided with a persistent property, enable this property to retain the value during power off or reboot. This property should only be used for variables whose values need to be stored as enabling persistent property If not needed will consume CPU and memory resource.

  Project variables can be added to the project by using the context menu provided for Project variables in the project browser.

  Project variables can be deleted using the context menu delete option or by pressing delete key.

  Project variables can be used in Logic Builder, Set Rule, Math Builder, String Converter, Boolean Builder and Colour Builder function elements.

Using Image Resources

Image Resources are added to the project and they are available throughout the project.

Adding image resources

Image resources can be added to the project using any of the following steps,

- Project browser, right click image resources and click add new.
- Images from any other file browser / internet browser can be added to the project using Drag-and-Drop.
- Project browser, select the image to be copied and paste it to any other project, this image resource will be added to the project specified.

Removing image resources

Image resources can be removed from the project using any of the following steps,

- Project browser, right click image resources and select delete
- Project browser, go to the image resources, and right click on the image to be deleted and select delete.
- Project browser, go to image resources and right click and select remove all unused message, this will delete all the image resource files which are not used in the project.

Device configurator

Device configurator can be found on the right hand corner of the toolbar. This allows the user to control the connected PanelPilotACE Device. The configurator has these features,

- Once device is connected it displays the Device serial number, Device Model and the Device Software version number.
- Design Studio supports multiple device connection. A pull down connected device list allows the user to select the target device. Only the target device will respond and process the request from the Design Studio.
- If the device is not connected/inactive it displays not connected.
- The Drop down menu provided at the right hand corner of the device configurator provides these actions,
  - **Identify device:** when clicked shows the device information on the selected target device. Therefore, user can identify the target device if multiple devices are connected.
  - **Hardware Information:** Gives the detailed device information. Hardware information includes the firmware version and software version of the device.

    Based on the version number you can check the compatibility of the latest upgrade package on the web site before applying the upgrade.
  - **Device Configuration:** Gives user an option to back up or restore the device calibration information, set real time clock and set a splash screen on the device.

    By default, all configure options are disabled on the dialogue. User can enable the configure options individually. All changes will be applied to the device when you click the Configure button.
    - Device calibration backup and restore:

Each PanelPilotACE device's analogue input channels are calibrated. This feature will be used only if there is a need to install the firmware if,

a) Device on board storage crash, use device calibration restore option.
b) To enhance the hardware feature, upgrading the firmware is the only option.

You will need to back up the calibration information before applying the firmware upgrade and restore the calibration after upgrading the firmware. Select "None" to disable this process.

- Set real time clock:

  Enable this option to synchronize the device real time clock according to the date time of the PC. User can also set the time adjustment to meet with the target place time zone without changing the PC clock.

- Configure Splash Screen:

  Splash screen shows up when the device initializes after power up or hardware reset .You can upload a custom splash screen or restore the default splash screen.

  To customise splash screen:

  a) Click the file selection button and select a picture or photo file in the dialogue.
  b) Click Yes to accept the splash screen image in the image preview dialogue.

  To disable the custom splash screen after select the image file, click the "cross" button and the file name on the text box will reset to "No splash screen selected".

  To restore the default splash screen on the device, click the "Restore Default Splash Screen" check box.

- **Upgrade device software:** To upgrade the device features to include the new features/enhance the available features introduced in the Design Studio, Select upgrade device software on the menu and select the upgrade software package file to start the upgrade process (available online if new device software is released). For more information on upgrading software refer upgrading the software.

  Design Studio will check the device compatibility with the application before applying the upgrade process. After clicking upgrade button to confirm the upgrade process, Design Studio will upload the upgrade software package and install the package onto the device. Device will restart after the installation.

  Do not disconnect or power off the device until the device upgrade process is complete.

- **Reboot device:** User may connect PPA device to his own circuit and want to test the project startup hardware initialization or status change. User can use the reboot device function to "warm boot" the device.

PanelPilotACE Integrated Development Environment (IDE)

PanelPilotACE Design Studio provides a complete integrated development environment for designers to create display applications without writing a line of code, it has two main Windows,

- Home Window : This window guides the user with creating projects
- Design Window: This window provides an environment to add different elements to the project with a canvas view to control the designing features

PanelPilotACE Home Window

The home window provides an interface to guide you through designing projects using design studio, have access to recently created projects and a set of pre-designed basic templates. This window is designed as a separable window to allow switching of home and design window. This enables users to watch tutorial videos and design projects simultaneously.

The Home window can be made a separable window by using this option,

Window menu and click separate welcome. If the user has two displays on one PC the user can have the design window and the other can have welcome window showing the tutorial video.

Getting Started

Getting started is designed to help beginners start designing projects using different elements provided in the library and making use of the controls to change their properties as required for building customised display projects. These tutorial videos are installed with the software and available to the user for guidance.

Templates

Templates are the basic pre-designed project with pre-configured element settings which can be used as base for creating new projects. Templates can be system templates or user templates.

System templates are pre-designed project templates installed with PanelPilotACE Design Studio. the templates page has list of system templates whilst the user templates page is available only after user templates have been imported in to the design studio. For more information on creating and importing user templates follow the steps given in user templates.

Recent projects

Recent projects show all recently created projects using Design Studio. This shows the list of recently used projects with a preview image of the default screen; this also provides open and removes options.

PanelPilotACE Design Window

The design window provides a complete graphical user interface to design new projects with different control windows to add in and edit properties of elements within the project. The center of the design window is provided with a canvas to create the project design.

The different browsers provided are,

- Project Browser
- Library
- Properties editor

- Function Builder

Project Browser

Project browser shows the structure of projects being worked on. Every project can be made up of multiple screens, Image resources and Project variables.

The control features provided in the project browser,

- Every element in the project browser tree structure is provided with context menu with related actions.
- The project browser supports Drag-and-Drop functionality. New project/projects can be added using Drag-and-Drop action.
- Image resources can be added to the project by selecting image elements from windows explorer or web browsers using Drag-and-Drop.

Project

The controls provided through projects context menu,

- Save
- Save As
- Save Copy As
- Export as Template
- Open Directory
- Rename
- Validate
- Preview in Emulator
- Upload
- Close
- Expand All
- Collapse All

Screen

The controls provided through screen context menu,

- Add New
- Paste
- Copy
- Move Up
- Move Down
- Find References
- Delete
- Rename

Project Variables

The controls provided through project variables context menu,

- Add Boolean Variable
- Add Number Variable
- Add String Variable
- Paste
- Copy
- Delete
- Rename
- Find References

Library

The controls provided for all elements in the library through context menu,

- More Information – F1: Provides the elements default properties and its preview image.
- Import – Ctrl + I: Imports the element templates to the library and is listed under user defined templates.
- Expand All – Ctrl + Shift + X : tree view control
- Collapse All – Ctrl + Shift + C: tree view control

Elements available in the library

The basic elements provided in the library for designing projects are,

- Standard Meters: pre-designed meters with pre-configured non-visual and visual elements.
- Visual Elements : Basic visual elements with no functionality
- Function Elements: are non-visual elements that add a defined functionality to the screen. A function element has a link to a visual component (a Basic Element or Container Element) and often one or more Hardware Integration Elements. The function element contains all the necessary logic to manipulate the visual component and/or Hardware Integration Elements.
- Container Elements: are non-visual elements that contain basic Visual Elements. A container element is useful to assign “functionality” to a group of elements as a whole. A container element has a ***position*** property, which is used as a reference location for all its contained elements.
- Hardware Integration Elements : are non-visual elements that expose the device’s hardware features to other elements.
- User Defined Templates/Element Templates : is a collection of any of the above set of elements selected and saved by the user as template to reuse the basic set of components while designing the screens of the project.

Standard Meters

This provides users with some of the common and basic pre-designed meter with pre-configured elements. Once this element is added to the canvas, customise the individual settings and configurations of its elements can be adjusted as needed. For more information on adding elements to the canvas follow Adding elements to canvas.

Visual Elements

This provides users with some basic shapes which can be a used to design meter displays.

- Ellipse
- Image
- Line
- Polygon(Irregular Polygon)
- Polygon(Regular Polygon)
- Rectangle
- Text Box
- Path Element
- Gradient Element

Common Properties

The following are some of the common properties and their valid value:

- ***Name*** – defines an element's identifier.

  The element's identifier name must have at least 2 characters and cannot have more than 255 characters.

  Only the following characters are allowed:

  - ✓ 'a' to 'z', 'A' to 'Z', '0' to '9', '_'

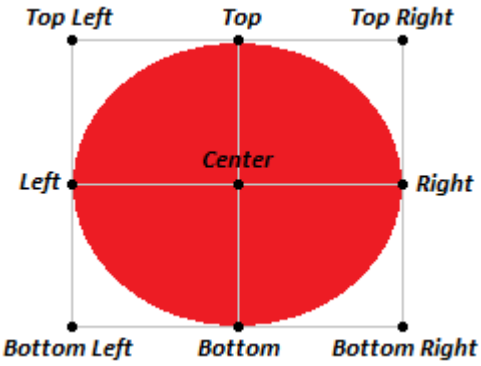
  The first character must be an English alphabet letter, and the following keywords are reserved (case sensitive):

  - ✓ abstract, alignof, asm, auto, bool, boolean, break, byte, case, catch, char, char16_t, char32_t, class, console, const, const_cast, constexpr, continue, debugger, decltype, default, delete, do, double, dynamic_cast, else, enum, explicit, export, extends, extern, false, final, finally, float, for, friend, function, goto, if, implements, import, in, inline, instanceof, int, interface, let, long, mutable, Math, namespace, native, new, noexcept, nullptr, operator, package, private, protected, public, register, reinterpret_cast, return, short, signed, sizeof, static, static_assert, static_cast, struct, super, switch, synchronized, template, this, thread_local, throw, throws, transient, true, try, typedef, typeid, typename, typeof, union, unsigned, using, var, virtual, void, volatile, wchar_t, while, with, yield

- ✓ The element's identifier must be different from any other element in its screen, its parent screen, and all project variables.

  For more information about the reserved words, please visit: https://developer.mozilla.org/docs/Web/JavaScript/Reference/Reserved_Words.

- ***Position*** – defines an element's x- and y-coordinate on the screen and its z-value.
  - ✓ X and Y: within the bounds of the screen.
- ***Layer*** - An element's z-value specifies its "depth"; i.e. if items are stacked on top of each other, the z-value is used to determine each element's order in the stack. Items with lower z-values are lower in the stack. This property can be changed by other elements. The positions of a Container element's "children" elements are relative to the Container Element's position.
  - ✓ Z: greater than 0.
- ***Size*** – defines an element's width and height.
  - ✓ greater than 0
- ***Colour*** – defines an element's fill colour.
  - ✓ Valid RGB code (hex code) or recognized name.
- ***Border*** – defines an element's border width and colour. The Line element does not have this property.
  - ✓ Same as colour property.
- ***Opacity*** – defines an element's transparency. The value can be between 0% and 100%, where 0 is transparent and 100 is opaque. If this property belongs to a Container Element, it changes the opacity of the Container Element's "children" elements.
  - ✓ between 10 and 100%
- ***Rotation*** – defines the rotation of an element in terms of a fixed point and an angle. This property can be used to change the "orientation" of the element at design-time or run-time. A design-time example is to use a triangle (▲) and use it as an arrow pointing left (▶) by setting its angle to 90°. A run-time example is to define a condition-value pair for the angle that will change its rotation at run-time, e.g. creating a "rotating needle". The angle is in degrees of rotation with 0 degrees being "north" (↑) of the fixed point, rotating clockwise as the angle increases. If the angle is a negative value, the rotation is anti-clockwise originating from the 0 degrees position. If this property belongs to a Container Element, it changes the rotation of the Container Element's "children" elements as a whole.
  - Fixed point
    - ✓ Data type: enumeration



- ***Top Left*** – the top left corner of the “bounding rectangle”.
- ***Top*** – the center of the top edge of the “bounding rectangle”.
- ***Top Right*** – the top right corner of the “bounding rectangle”.
- ***Left*** – the center of the left edge of the “bounding rectangle”.
- ***Center*** – the center of the “bounding rectangle”.
- ***Right*** – the center of the right edge of the “bounding rectangle”.
- ***Bottom Left*** – the bottom left corner of the “bounding rectangle”.
- ***Bottom*** – the center of the bottom edge of the “bounding rectangle”.
- ***Bottom Right*** – the bottom right corner of the “bounding rectangle”.

- ***Visible*** – defines whether an element is visible or not at run-time. This property can be changed by other elements. If this property belongs to a Container Element (Group element), it changes the visibility of the Container Element’s “children” elements.
- ***Maintain Aspect Ratio*** – this property is not saved with project, this is only used during design time to lock the elements aspect ratio while resizing the element on the canvas.

Element Related Properties

Some of the elements have extra properties other than these common properties.

Image

- ***Name*** – defines an element’s identifier.

The image resource's identifier name must have at least 2 characters and cannot have more than 255 characters including the file extension.

Only the following characters are allowed:

'a' to 'z', 'A' to 'Z', '0' to '9', ' ' (Space), '~', '`', '!', '@', '#', '$', '%', '&', '", '(', ')', '-', '_', '+', '=', '{', '}', '[', ']', ',', '.'

The name cannot start with space or '.', and the following keywords are reserved (case insensitive):

AUX, COM1, COM2, COM3, COM4, COM5, COM6, COM7, COM8, COM9, CON, LPT1, LPT2, LPT3, LPT4, LPT5, LPT6, LPT7, LPT8, LPT9, NUL, PRN

For example, identifier name "aux.png" is not allowed, and "aux.image.png" is also not allowed. But "aux_image.png" and "image.aux.png" are allowed.

The image resource's identifier must have the same extension as the image format.

- **Source** – This property stores name of the image source which is set in for the image element, Change in this source will change the image shown in this element.
  - ✓ Should be a valid image file.
  - ✓ The image formats supported for this element are (bmp, jpg, jpeg, png, gif, tif, and tiff).

Note: Too big animated files may consume more CPU on the device. The max size of animated files supported on the device also depends on the other elements used to design the project.

Line

- ***Length-*** Defines the length of the line the
  - ✓ Maximum value 9999.
- ***Angle-*** Defines the angle of the line
  - ✓ 0^o to 360^o.
- ***Thickness-*** Defines the thickness of the line
  - ✓ Maximum value 100 px

Irregular Polygon

- ***Points List –*** Defines the number of points that make up this polygon
  - ✓ Value from 3 to 20.
    This property also includes a rotate property; this is different from the normal rotation property as this will generate a new polygon with the rotation set.

Regular Polygon

- ***Edges-*** Defines the number of edges that make up this polygon
  - ✓ Value from 3 to 20.
- ***Edge Length-*** Defines the length of the edges that make up this polygon
  - ✓ Value from 1 to 320.

Gradient Element

This element is not available in the library and can be created using the context menu actions provide in the canvas. Add gradient fill actions are available in the context menu for any visual element other than group element and textbox element selected on the canvas. The gradient fill actions that can be performed to create this element are,

Linear Gradient: includes all properties mentioned in common properties and,

- **Gradient Stops:** This sets the colour stops for the visual element, input values in percentage (with respect to the visual elements bounding rectangle).
  - ✓ Any integer values from 0 to 100 and 101 are the maximum number of stops that can be added.
- **Start:** This sets the start point from which the gradient colour gets applied on the visual element, input value in percentage (with respect to the visual elements bounding rectangle).
  - ✓ Any integer values from 0 to 100.
- **Final Stop:** This sets the final point at which the gradient colour applied on the visual element stops.
  - ✓ Any integer values from 0 to 100. The start stop and final stop cannot be the same.

Conical Gradient: Includes all properties mentioned in common properties and,

- **Gradient Stops:** This sets the colour stops for the visual element, input values in percentage (with respect to the visual elements bounding rectangle).
  - ✓ Any integer values from 0 to 100 and 101 are the maximum number of stops that can be added.
- **Focal Point:** This sets the focal point from which the gradient colour gets applied on the visual element, input value is with respect to the visual element.
- **Radius:** This sets the radius for the gradient colour applied on the visual element.
- **Center:** This sets center point from which the gradient colour gets applied on the visual element, input value with respect to the visual element.
- **Spread:**
  - Pad Spread
  - Reflect Spread
  - Repeat Spread

Radial Gradient: Includes all properties mentioned in common properties and,

- **Gradient Stops:** This sets the colour stops for the visual element, input values in percentage (with respect to the visual elements bounding rectangle).
  - ✓ Any integer values from 0 to 100 and 101 are the maximum number of stops that can be added.
- **Start angle:** This sets the start angle at which the gradient colour is applied on the visual element.
  - ✓ Any decimal values from 0 to 359.99 in degrees. The start stop and final stop cannot be the same.
- **Center:** This sets center point for the gradient colour that is applied on the visual element, input value is with respect to the visual elements.
- **Spread:**
  - Pad Spread
  - Reflect Spread
  - Repeat Spread

Note:

1. Performing this gradient fill action creates a new visual element which can be used like any other visual element to combine with function and hardware elements.
2. The original visual element on which this action was performed does not get deleted and still exists on the canvas after performing this action.

Path Element

This element is not available in the library and can be created using the context menu actions provided in the canvas. Merge Actions are available in the context menu when there are two elements which overlap each other. The Merge actions that can be performed on two elements to create this element are,

Combine Elements: This combines the two elements by performing add on the two visual elements path.

Intersect Elements: This combines the two elements by performing intersect on the two visual elements path.

Subtract Elements: This combines the two elements by performing subtract on the two visual elements path.

Note:

1. The performed merge action creates a new visual element which can be used like any other visual element to combine with function and hardware elements.
2. The resultant path after performing the subtract merge action depends on the order of visual elements selected. Change in the order of selection of elements gives different resultant shape/path.
3. The visual elements used to create this path element do not exist after performing merge action.

Text Box

This element provides context menu option Auto Fit, Auto Fit – to Text Box and Auto Fit – to content.

Text- Defines the text to be displayed within the box (can be multiple lines).

Text Alignment – Defines the text alignment within the box.

- **Top Left**
- **Top**
- **Top Right**
- **Left**
- **Center**
- **Right**
- **Bottom Left**
- **Bottom**
- **Bottom Right**

Font- Defines the type of font for the text to be displayed.

- **Pixel Size :** defines the size of the font
- **Font Style:** Bold, Italic , Underline, Over line, Strikeout
- **Letter spacing**: The spacing provided between the letters of the text.
- **Word spacing:** The spacing provided between the words of the text.

Text Style- Defines the style of the text displayed.

- **Raised**
- **Sunken**
- **Outline**

Note:

1. Each of the font families provided in the font drop down support a different set of languages, users can choose the font family according to the language requirement. The language support information is provided through the help button or as tool tip.
2. The Font rendering is not the same on PC and the device; hence the emulator preview and the view on the device may vary. User needs to test the font rendering on the device once the project is designed and modify either the font size or the text box size to adjust the font rendering on the device.
3. Korean language is supported only by NanumGothic font family; the other font families do not support Korean language.

Container Elements

Container element is a non-visual element that contains visual Elements. A container element is useful to assign "functionality" to a group of elements as a whole. A container element has a position property, which is used as a reference location for all its contained elements.

Group Element

This element is not available in the library and can be created using the context menu actions provided in the canvas. Two or more visual elements on the canvas can be selected and grouped together using the canvas, context menu, group action. The group element formed can be linked to a Function Element. If linked to a Function Element that requires an "ordered" group, the elements contained in the Group Element must be manually ordered to ensure the correct run-time behavior.

Group element has all the common properties of the visual element and Element index property.

Element index property: this property holds the order of elements contained in the group element. This order is used to ensure the correct run-time behavior when connected to function elements.

- The control of this property provides up and down arrows to control the order of elements in the group element.
- The control provides an ungroup option to ungroup all the elements in the group into individual elements.
- The control also provides context menu to remove individual elements for the group.

Function Elements

Common Properties

All the function elements are provided with ,

Enable – This property - when set - enables the respective function and disables when unchecked, this property is also available in runtime objects and can be controlled by the other function elements during runtime.

Action

Action elements need a trigger to get executed. Actions can be triggered using other function elements like Button, Timer, Properties Trigger, Logic Builder, Set Rule, RS232 Send, RS232 Recieve.

Change Properties

When triggered changes the properties of element/elements on the screen. Property of this element that needs configuring,

Property Changes- This is a list of element with properties set to be changed.

Note:

1. Can only change the properties of Visual Elements in the screen.
2. Cannot change the order of elements in the group element.
3. Cannot change the element's name.

Load Screen

This action loads another screen or reloads the current screen. Property of this element that needs configuring,

Load Screen- set link to the screen to be loaded.

Set Rule

The action performs the setting of rules. This action element provides the user with the option to perform change properties action before executing rules and perform load screen after executing rules,

Change Properties- set a link to change properties action element.

Set Expressions- list of rules to be performed when this action gets triggered.

Load Screen-set a link to load screen action, to be performed after executing the rules set.

Alarm

Configures the alarm condition for the analogue input. The configurable properties for setting an alarm.

Analogue Input Element - set link to an analogue input hardware element.

Alarm Output Element- Set link to an alarm output hardware element.

Indicator Element- set link to a visual element which indicates the alarm output state (this element is also used as a reset element for Manual Reset Behavior).

Turn on Alarm When - Conditions set in this property controls the alarm trigger.

Using this condition you can trigger alarm when,

- **Less Than** the value
- **Greater Than** the value
- **Less Than or Equal to** the value
- **Greater Than or Equal to** the value
- For setting alarm for all values that lie between two input values, the user can choose to use && or || button to add two conditions.

Value here refers to the scaled value, for more details on scaling refer to Voltage Scaling property above.

Reset Behavior – sets the alarm's reset behavior

- **Automatic:** When analogue input is in the valid range the alarm turns off automatically, if the alarm was already set by an out of range analogue input value. The indicator element is not a must have element for this behavior.
- **Manual:** Once the alarm is set by an out of range analogue input value, a touch screen click of the indicator element is required to reset the alarm when the analogue input is in a valid range. Indicator element is a must have element for this behavior.
- **Custom:** Similar to Manual behavior but that it provides an extra visual element to be set as a reset element to reset the alarm.

Reset Element - set link to a visual element which will reset the alarm when in a valid range of analogue input.

Analogue Clock

Configures the Visual Elements as an analogue clock. The properties to be configured to build a customised analogue clock,

Time Zone: set the time zone as required or use the system default time zone.

Clock Hand (hour): Set the visual element to be used as the hour hand.

Fixed Point (hour): Set the point of rotation for the hour hand, for a valid set of values refer to rotation in common properties.

Clock Hand (minutes): Set the visual element to be used as the minute hand.

Fixed Point (minutes): Set the point of rotation for the minute hand, for a valid set of values refer to rotation in common properties.

Clock Hand (seconds): Set the visual element to be used as the second hand.

Fixed Point (seconds): Set the point of rotation for the second hand, for a valid set of values refer to rotation in common properties.

Clock hand style: Set the style of movement for the clock hands.

- **Discrete**
- **Continuous**

Boolean Builder

This function element is used to create a Boolean value that can be used by other functions like logic builder and math builder (for expressions containing conditional operator '?'). The property that needs to be configured,

Set Expressions - This conditional expression can be built using a combination of an element's properties (visual element, function element or hardware element). The value of the expression that evaluates to true/false.

Button

Configures the visual element as a button.

Visual element: set up link to the Visual element.
Action element: set up link to the Action Element.
Normal state: set change in properties for the set visual element to represent normal state.
Pressed state: set change in properties for the set visual element to represent pressed state.
On clicked perform: set the action to be performed when the button element is clicked.
On double clicked perform: set the action to be performed when the button element is double clicked.
Double click interval: set the interval for the double click action.
On long pressed perform: set the action to be performed when the button element is long pressed.
Long press interval: set the interval for the long press action.

Button (Checkable)

This configures the visual element to behave like a check buttons. The properties that can be configured for this element are,

Visual element: set up link to the Visual element.
Un Checked State: set the change in properties for the set visual element to represent checked state.
On unchecked perform: set action to be performed when visual element is set to unchecked state.
Checked state: set change in properties for the set visual element to represent checked state.
On checked perform: set the action to be performed when the button element is set to checked state.
Checked: set the initial state for the visual element.

Colour Builder

This element creates a colour constant, which can then be used in any other function elements that make use of colour type (in assignments, in comparisons).The properties that need to be set,

Colour- Set a colour from the colour picker.

Colour Meter

Configures the visual element to change the colour depending on the analogue input.

Analogue Input Element - link to an analogue input hardware element

Voltage Scaling - This scaling property is applied on the analogue input values.

- **Min Value :** the analogue input's min voltage is mapped to this value
- **Max Value :** the analogue input's max voltage is mapped to this value
- **Valid Value Range :** the user can set a valid value range (value is in between min and max values)

Visual element: set up link to the Visual element.

Colour Role:

- **Major Role:** Set the colour change for visual element's colour property.
- **Minor Role:** Set the colour change for visual element's border- colour property.

Colour: Set the end colour/ colour when maximum value of the analogue input is reached. Visual elements colour property value (colour) is used as the start colour/colour when minimum value of the analogue input is reached.

Date Time Display

This configures the TextBox Visual element to display the date and time.

Time Zone: Set the time zone or use the system default time.

Text element: Set up the link to the TextBox Visual element.

Date & Time Format: Set the date and time display format, the help button provided on the right hand side gives more information on the type of formats available and you can also test the format before setting in this more information dialogue.

Digital Channel Indicator

This configures the visual element to indicate the digital input output hardware element's digital input or output value.

Digital Input/ Output Element: link to a digital input output hardware element.

Indicator Element: set link to a visual element which indicates the digital input output value.

On State: set the indicator elements visibility state.

Digital Display

This Element configures a text box element as a digital display for an Analogue Input. Properties of this element are,

Analogue Input Element - link to an analogue input hardware element

Voltage Scaling - This scaling property is applied on the analogue input values.

- **Min Value :** the analogue input's min voltage is mapped to this value
- **Max Value :** the analogue input's max voltage is mapped to this value

- **Valid Value Range :** the user can set a valid value range (value is in between min and max values)

Text Element - link to a text box element which will display the set value on analogue input change.

Decimal Places - This sets the decimal places for the displayed text value.

Digital Output Controller

This element configures the analogue input values to control the digital output value. Properties of this element are,

Analogue Input Element - link to an analogue input hardware element

Set digital Output to 1 - Condition set in this property controls the digital output value set.

Using this condition you can set the digital output when,

- **Less Than** the value
- **Greater Than** the value
- **Less Than or Equal to** the value
- **Greater Than or Equal to** the value
- For setting digital output to 1 for all values that lie in between two input values, the user can choose to use && or || button to add two conditions.

Value here refers to the scaled value, for more details on scaling refer to Voltage Scaling property above.

Effect(Blur)

This element applies blur effect to a visual element. Properties that need to be configured for this element are,

Visual element: set up link to the Visual element.

Blur Radius: The radius with respect to the center of the visual element around which this effect is visible, value is in pixels.

Blur Hint:

- **Performance** the value indicates that rendering performance is the most important factor, at the potential cost of lower quality.
- **Quality** the value indicates that rendering quality is the most important factor, at the potential cost of lower performance.
- **Animation** the value indicates that the blur radius is going to be animated, hinting that the implementation can keep a cache of blurred versions of the source. Do not use this hint if the source is going to be dynamically changing.

Effect(Colourise)

This element applies the colourise effect on any given visual element. Properties that need to be configured for this element are,

Visual element: set up link to the visual element.

Colour: the value is used to create the colourise effect on the original visual element.

Strength: the value set indicates strength (in percent) of the colour set in the colour property above to create the colourise effect.

Effect (Drop Shadow)

This element applies shadow effect on any given visual element. Properties that need to be configured for this element are,

Visual element: set up link to the visual element.

Blur Radius: The radius with respect to the center of the visual element around which this effect is visible value is in pixel.

Colour: The value set is used to create the shadow effect on the original visual element.

Offset: The value set defines the offset between the original visual element's x and y position and the x and y position of the shadow.

Effect (Opacity)

This element applies opaque effect to any given visual element. Properties that need to be configured for this element are,

Visual Element: set up link to the visual element.

Opacity: the level of opacity to be applied in percent, 0% fully transparent and 100% fully opaque.

Opacity mask: the type of mask to be applied on the set visual element

- ***Colour*** – selecting this will show an extra colour property and the colour set in this property is used to create a colour mask over the visual element using the opacity value set in the above property.
- ***Conical Gradient*** – the opacity is applied using conical gradient on the given visual element.
- ***Linear Gradient***– the opacity is applied using linear gradient on the given visual element.
- ***Radial Gradient*** – the opacity is applied using the radial gradient on the given visual element.

Error Handler

Error Handler (RS232 I/O)

This element sets an error behavior for any input output error detected during RS232 communication. If the received signal name is not decoded properly this error is triggered. The properties that need to be set for this element are,

Serial Port: Set up link to the serial COM Port hardware element over which communication is established.

Error Triggers: this property enables the type of error to be detected during input output operation on serial COM Port , at present provides the receive signal name decode errors is supported.

Error Behaviour: set up link to the error behavior element that needs to be set on triggering the error.

Error Behaviour duration: set up the duration for which the error behavior is to be in force for the error triggered.

On Error Action: set up the action to be performed on error triggered.

Error Handler (RS232 Receive)

This element sets an error behavior for any receive related errors that occur during RS232 communication.

RS232 Receive: set up link to the RS232 receive element for which the error handling is to be configured.

Error Triggers: this property enables the type of error to be detected during receive operation performed on serial COM Port,

- ***Name decode error*** – enables the name decode error for the variable value to be received by the RS232 receive element linked.
- ***Data type decode error*** – enables the data type decode error for the variable values to be received by the RS232 receive element linked.
- ***Data value decode error*** – enables the data value decode error for the variable values to be received by the RS232 receive element linked.
- ***Data overflow error*** – enables the data overflow error for the RS232 receive element it is linked to.

Error Behaviour: set up link to the error behavior element that needs to be set on triggering the error.

Error Behaviour duration: set up the duration for which the error behavior is to be in force for the error triggered.

On Error Action: set up the action to be performed on error triggered.

Error Handler (RS232 Send)

This element sets an error behavior for any send related errors that occur during RS232 communication.

RS232 Send: set up link to the RS232 send element for which the error handling is to be configured.

Error Behaviour: set up link to the error behavior element that needs to be set on triggering the error.

Error Behaviour duration: set up the duration for which the error behavior is to be in force for the error triggered.

On Error Action: set up the action to be performed on error triggered.

Fill Meter

This element configures the visual element to function like a fill meter. The properties that need to be configured to set up a visual element to function as a fill meter are,

Analogue input element: set up link to the analogue input hardware element

Visual element: set up link to the Visual element

Background colour: set the background colour to the fill meter.

Full side – defines which side of the visual element represents the "full" side of the meter.

- ***Top*** – the top edge of the "bounding rectangle".
- ***Left*** – the left edge of the "bounding rectangle".
- ***Right*** – the right edge of the "bounding rectangle".
- ***Bottom*** – the bottom edge of the "bounding rectangle".

✓ Default value: Right

Group Meter

This element configures the group element to function like meter which enables the visibility of the visual elements within the group element according to their index value set.

Analogue input element: set up link to the analogue input hardware element

Voltage Scaling-This scaling property is applied on the analogue input values.

- **Min Value :** the analogue input's min voltage is mapped to this value
- **Max Value :** the analogue input's max voltage is mapped to this value
- **Valid Value Range :** the user can set a valid value range (value is in between min and max values)

Group element: set up link to the Group element which is to be configured to work as meter.

Start from Zero: enable or disable the meter to start from the first index of the group element.

Linear Needle

This element configures the visual element to function like a linear needle. The properties that need to be configured to set up a visual element to function as a linear needle are,

Analogue input element: set up link to the analogue input hardware element

Voltage scaling: This configures the voltage scaling for the analogue input value of the linked analogue input element.

- **At Min Voltage:** The scaled value at min voltage of analogue input element.
- **At Max Voltage:** The scaled value at max voltage of analogue input element.
- **Valid Value Range:** The range of values within the actual range set above is configured to be used by the visual element to set in the linear needle behavior.

Visual element: set up link to the Visual element.

Displacement:

- **X:** The horizontal displacement to be set for the visual element.
- **Y:** The vertical displacement to be set for the visual element.

Logic Builder

This function element is provided for advanced users to build logic and, depending on the logic, built a set of actions to be performed. The properties that can be configured to set up this function element are,

Logical Actions: This property is a list of logical expressions, each connected to respective action elements that will be performed if the logical expression evaluates to true.

Logical expression here is constructed using the properties of visual element, function element , hardware element, mathematical constants and other constant values provided by the user.

Default Action: set up link to an action element, this will be performed when none of the conditions provided in the above property evaluate to true.

Math Builder

This element is used to construct a value using a mathematical expression. Each of the operand in the expression are either properties of visual elements, function elements, hardware elements, project variables ,constant numbers or any standard mathematical constants/values.

Mathematical Expression: set up the expression using individual operands which can be properties of visual elements, function elements, hardware elements, project variables, constant numbers or any other standard mathematical constants/values.

Decimal places: Set the number of decimal places for the value calculated or built using the mathematical expression set.

Opacity Meter

This element configures a visual element to change its opacity depending on the analogue input. The properties that need to be configured,

Analogue input element: set up link to the analogue input hardware element

Voltage Scaling-This scaling property is applied on the analogue input values.

- **Min Value :** the analogue input's min voltage is mapped to this value
- **Max Value :** the analogue input's max voltage is mapped to this value
- **Valid Value Range :** the user can set a valid value range (value is in between min and max values)

Visual element: set up link to the Visual element.

Opacity: The property sets the opacity level for the max valid range value. The min valid value range takes the visual elements opacity as the min opacity level.

Out of Range Behavior

This element configures out of range behavior for the selected visual element. This function element can be linked to any visual element that is configured to work as any other function element. The properties to be configured,

Analogue input element: set up link to the analogue input hardware element

Voltage Scaling-This scaling property is applied on the analogue input values.

- **Min Value :** the analogue input's min voltage is mapped to this value
- **Max Value :** the analogue input's max voltage is mapped to this value

Condition Property: Condition set in this property controls when the out of range behavior is set.

- **Less Than** the value
- **Greater Than** the value
- **Less Than or Equal to** the value
- **Greater Than or Equal to** the value
- For setting out of range behavior for all values that lie in between two input values, the user can choose to use && or || button to add two conditions.

  Value here refers to the scaled value, for more details on scaling refer to Voltage Scaling property above.

Out of Range Behavior: Can be of following types

- **Blink:**
  - **Number of blinks -** sets the number of times the blinking is to be performed on the visual element set.
  - **Blink interval-** Set the interval between blinks in seconds
  - **Blink duration -** Set the duration for blinking
- **Change Colour:** This allows the user to choose colour
  - **Inverted Colour -** The colour of the visual element set is inverted.
  - **Transparent-** The visual element set is made transparent
  - **Custom Colour-** The visual element set will change to the custom colour set.
- **Change Opacity:** to change the opacity of the visual element set.
- **Change Position:** set the position of the visual element set.
- **Change Visibility:** sets the visibility of the visual element set.
- **Change Rotation:** sets the rotation of the visual element set.
- **Show Message:** sets the text to be displayed for the visual element (Should be Text Box element) set.
- **Zoom in/Zoom out:** sets the Zoom factor of the visual element set.

Note:

1. Change Position and Change Rotation cannot be used with a visual element used by an analogue clock (Dependent on Real time clock, always kept working does not depend

on user input).

2. Show Message cannot be used with visual elements which are already used by Date and Time display (Dependent on Real time clock, always kept working does not depend on user input).

Property Trigger

This element helps the user construct customised meters by providing a trigger on change in any of designer element's properties. This change in a property can trigger any number of required actions. The properties that need to be configured for this element are,

Element Property: set the element's property, the change in value of which will trigger the action/actions scheduled to be performed.

Actions Scheduler: set the action or set of actions to be performed, the order follows the order in the actions scheduler.

PWM Control Switch

This element uses three visual elements to act as controlling elements for the PWM output.

PWM output element: set up link to the PWM output hardware element.

Increase Switch element: set link to a visual element to be used as a control to increase the PWM output when clicked.

Decrease Switch element: set link to the Visual element to be used as a control to decrease the PWM output when clicked.

Level Indicator element: set link to the visual element which will indicate the level of PWM output.

Step Size: defines the step size by which the increase element and decrease element will change the PWM output value.

Full side – defines which side of the visual element which represents the "full" side of the meter.

- ***Top*** – the top edge of the "bounding rectangle" of level indicator element.
- ***Left*** – the left edge of the "bounding rectangle" of level indicator element.
- ***Right*** – the right edge of the "bounding rectangle" of level indicator element.
- ***Bottom*** – the bottom edge of the "bounding rectangle" of level indicator element.

✓ Default value: Right

Background Colour: Set background colour to the indicator element.

✓ Validation: All the three visual elements used in this function element need to be different.

PWM Output Controller

Configures an analogue input to control the PWM output

Analogue input element: set up link to the analogue input hardware element

PWM output element: set up link to the PWM output hardware element.

Voltage Scaling-This scaling property is applied on the analogue input values.

- **Min Value :** the analogue input's min voltage is mapped to this value

- **Max Value :** the analogue input's max voltage is mapped to this value
- **Valid Value Range :** the user can set a valid value range (value is in between min and max values)

Visual element: set up link to the Visual element.

Rotating Needle

Configures the analogue input to control the rotation of the visual element.

Analogue input element: set up link to the analogue input hardware element.
Voltage Scaling-This scaling property is applied on the analogue input values.

- **Min Value :** the analogue input's min voltage is mapped to this value
- **Max Value :** the analogue input's max voltage is mapped to this value
- **Valid Value Range :** the user can set a valid value range (value is in between min and max values)

Visual element: set up link to the Visual element
Fixed Point: This configures the rotation point for the visual element. For a valid set of values please refer rotation in common properties.
Angle Range: This configures the minimum and maximum rotation angle for the minimum and maximum scaled voltage value of the analogue input. This rotation is applied on the visual element.

- ✓ Validation: The minimum angle range value should be smaller than the maximum angle.

RS232 Error Behavior

This element is used to configure error handling behavior for RS232 related communication functions. The properties that need to be configured are,

ErrorBehaviour: The type of behavior to be set on the visual element it gets connected to when used in RS232 error handlers.

Can be of following types

- **Blink:**
  - **Number of blinks -** sets in the number of times the blinking is to be performed on the visual element set.
  - **Blink interval-** Set the interval between blinks in seconds
  - **Blink duration -** Set the duration for blinking
- **Change Colour:** This allows the user to choose colour
  - **Inverted Colour -** The colour of the visual element set is inverted.
  - **Transparent-** The visual element set is made transparent
  - **Custom Colour-** The visual element set will change to the custom colour set.
- **Change Opacity:** to change the opacity of the visual element set.
- **Change Position:** set the position of the visual element set.
- **Change Visibility:** sets the visibility of the visual element set.
- **Change Rotation:** sets the rotation of the visual element set.
- **Show Message:** sets the text to be displayed for the visual element (Should be Text Box element) set.

- **Zoom in/Zoom out:** sets the Zoom factor of the visual element set.

RS232 Receive

This element receives the set of data values and performs the configured action on receiving the data values. The properties that need to be configured are,

Serial Port: Set up link to the serial COM Port hardware element over which communication is established.

Receive values: Set up the list of data values that need to be received or set, can be elements property or project variables, but cannot be constants.

Action Element: set link to an action element which will be triggered on receiving the required set of data values.

RS232 Send

This element sends the set of data values. The properties that need to be configured are,

Serial Port: Set up link to the serial COM Port hardware element over which communication is established.

Send values: Set up the list of data values that need to be sent, can be elements property or project variables and constants.

Scale Meter

Configures the analogue input to control the scaling factor of the visual element.

Analogue input element: set up link to the analogue input hardware element.
Voltage Scaling-This scaling property is applied on the analogue input values.

- **Min Value :** the analogue input's min voltage is mapped to this value
- **Max Value :** the analogue input's max voltage is mapped to this value
- **Valid Value Range :** the user can set a valid value range (value is in between min and max values)

Visual element: set up link to the Visual element
Scale Origin: This configures the rotation point for the visual element. For a valid set of values please refer rotation in common properties.
Scale Range: This configures the minimum and maximum scale factor for the minimum and maximum voltage value of the analogue input. This scaling is applied on the visual element.

- ✓ Validation: The minimum scale factor value should be smaller than the maximum scale factor value

String Converter

This element is provided to construct a string value from any other type of element properties like Integer, Boolean, Colour, Real, which can then be used for exact comparisons in the logical expressions constructed using the logic builder or for displaying the custom output by adding prefix and/or suffix to the string values constructed. The properties that need to be configured are,

Input Variable/Property: Set the property of any element or project variable, the string form of which is needed.

The different options available depending on the type of variable converted to string are,

Input Variable is Integer:

- **Format :** the different types of format are,
  - Natural Format
  - Scientific Format
  - Automatic Format
  - Hexadecimal Format
- **Letter Case :** the different type of format are,
  - Natural Case
  - Upper Case
  - Lower Case
- **Zeroes :** enable or disable trailing zeroes (or leading zeroes in the case of hexadecimal format)
- **Decimal Places:** Controls the number of decimal places required for the number.
- **String "NaN":** Can specify a customised value for NaN if not "NaN" is used
- **String "Infinity":** Can specify a customised value for Infinity if not "Infinity" is used.
- **String "-Infinity":** Can specify a customised value for –Infinity if not "-Infinity" is used.
- **String "True":** Can specify customised value for true if not "True" is used.
- **String "False":** Can specify customised value for false if not "False" is used.
- **Prefix:** Can add in a prefix for the string constructed with the value.
- **Suffix:** Can add in a suffix for the string constructed with the value.

Toggle

This configures the two visual elements to control the alarm output or digital output on the respective hardware elements.

PWM output element / Alarm output element: set link to the PWM output element or an Alarm output element.

Switch on Visual Element: set link to the visual element, used to switch on the output element's value.

Switch off Visual Element: set link to the visual element, used to switch off the output element's value

***Note:** The switch on and switch off visual element cannot be the same.

Toggle with Indicator

Similar to switch, includes an indicator element with an on state.

All the properties of Switch and

Indicator Visual Element: set link to the visual element, to be used as an indicator to show the on/off state of the output element.

On State: Set the indicator element's visibility depending on the on state.

Timer

Configure this element to trigger an action.

Interval: Set the regular interval of time (in milli seconds) for the timer to trigger the action.

Repeat Behavior: An integer value set to zero by default which repeats the timer action set continuously. Any other integer value set will repeat this timer action for that specific number of times.

Action Element: set link to an action element which will be triggered on start of timer. The action element can be Change Properties.

Start Delay: set a time interval after which the timer will start performing the configured action.

Hardware Integration

Hardware Integration elements are the non-visual elements that expose the device's hardware features to other elements. The Other elements linked with this element can access the properties of this hardware element.

Alarm output

Configures the Channel to set the alarm output value.

Channel: Set the Channel number to associate the value set on Alarm output element.

- ✓ Validation :
  1. Depends on the number of alarm output channels supported by the hardware/device. Any integer value within 1 to maximum number of output channels supported.
  2. Multiple output elements cannot be associated to the same channel.

Note: Depending on the configuration of the device the project is designed for this control will automatically provide a valid set of channel numbers.

Initial Value: Set the initial state for this output channel (On/Off).

Analogue input

Configures the Channel number for the analogue input.

Channel: Set the Channel number to associate the analogue input value.

- ✓ Validation :
  1. Depends on the number of analogue input channels supported by the hardware/device. Any integer value within 1 to maximum number of analogue input channels supported.
  2. Multiple analogue input elements cannot be associated to the same channel.

Note: Depending on the configuration of the device in the project, channel control will automatically provide valid set of channel numbers.

Voltage Range: Set in the voltage range for the analogue input.

- **Minimum:** The minimum voltage of analogue input element.
- **Maximum:** The maximum voltage of analogue input element.

Digital input output

Configures the channel number of the digital input output element. The channel's input or output state is configured for the project. For more information on configuration of the digital input output channels for the signal type refer device configuration.

Channel: Set the channel number to associate the digital input output value.

- ✓ Validation :

  1. Depends on the number of digital input output channels supported by the hardware/device. Any integer value within 1 to maximum number of digital input output channels supported.
  2. Multiple digital input output elements cannot be associated to the same channel.
  3. The configuration of the digital input output channels in the project set the signal type for the digital input output.
  4. Some of the function elements (Digital channel indicator) use input signal type and some function elements (Switch, Switch with indicator, Digital input output controller) use output signal type.

  Note: Depending on the configuration of the device in the project, channel control will automatically provide valid set of channel numbers.

Signal Type: This is a read only property, displays the signal type of the channel set.

Initial Value: Set the initial state for digital input output channel (On/Off).

PWM output

Configures the Channel to set the PWM output value.

Channel: Set the Channel number to associate the value set on PWM output element.

- ✓ Validation :
  1. Depends on the number of PWM output channels supported by the hardware/device. Any integer value within 1 to maximum number of output channels supported.
  2. Multiple output elements cannot be associated to the same channel.

  Note: Depending on the configuration of the device the project is designed for this control will automatically provide valid set of channel numbers.

Initial Value: Set the initial state for this output channel (On/Off).

Serial COM Port

Configures the channel for serial communication. The properties that need to be configured for using the serial COM Port are,

Channel: Set the Channel number to associate the value set on PWM output element.

- ✓ Validation :
  1. Depends on the number of Serial COM port channels supported by the hardware/device. Any integer value within 1 to maximum number of output channels supported.

Note: Depending on the configuration of the device the project is designed for this control will automatically provide valid set of channel numbers.

Service Type: set the type of communication set up needed with the device,

Terminal Type: The device is connected to the terminal for communication.

Native Type: The device is connected to another PanelPilotACE Device for communication.

Baud Rate: The baud rate for the communication set up.

Parity Bit: This can be set to either none, odd or even depending on usage. This is used for detecting errors during transmission.

Stop Bit: Stop bits sent at the end of every character allow the receiving signal hardware to detect the end of a character and to resynchronise with the character stream can be set to either 1 bit or 2 bits.

Flow Control: A serial port may use signals in the interface to pause and resume the transmission of data. This can be configured to none, Xon/Xoff (Software control) or Hardware Control.

Terminal Mode: This property is configured only when the service type is terminal type. Each of the options provided format the data transmitted on the terminal display and is provided with following options,

Single Raw Data

Multiple Raw Data

Scroll up with Prompt

Fixed Prompt

Error Check Level: This property is configured only when the service type is native type and the is provided with following options,

Level -0: The data values transmitted or received are not checked for data value length and CRC check.

Level-1: The data values transmitted or received are checked for data value length only.

Level-2: The data values transmitted or received go through CRC check only.

Level-3: The data values transmitted or received go through both data value length and CRC check.

Send Terminator: Configures the terminating character for the RS232 Send function to be performed over this serial COM Port.

Receive Terminator: Configures the terminating character for the RS232 Receive function to be performed over this serial COM Port.

Send Separator: Configures the separator character for the set of data values to be transmitted using RS232 Send function over this serial COM Port.

Receive Separator: Configures the separator character for the set of data values to be received using RS232 Receive function over this serial COM Port.

User Defined Elements/Element Templates

Element templates can be created by the user accessing the context menu option provided on the canvas. The element templates can be any combination of visual elements, hardware elements and function elements. Element templates created are available in the library under user defined templates.

Creating user templates

To create a user defined element template follows these steps,

- Select the elements on the canvas; can be a combination of visual elements, function elements, hardware elements.

  Or

  Select the elements in the function builder; can be a combination of visual elements, function elements, hardware elements.

- Right click for context menu; select save as template action in this menu.
- The template thus created is added to the library user templates.

Context menu actions provided for user templates

- **Renaming:** To rename saved user templates, go to library, user templates, select the user template to rename, right click for context menu and select rename.
- **Import:** To import the saved user templates from any other location into the Design studio application.

Note:

1. If the imported template is a project template, template is added to design studio as a project template and is available as a user defined project template in the welcome window, templates.
2. If the imported template is an element template, the template is added to the library as a user defined template.

- **Export:** To export the user template to any other location/save as a .pptemplate file.
- **More Information:** Give preview of the template and information on the elements included. If the user provides a description during export action, the description will show in the tool tip.
- **Edit Description:** The description can be changed using this option.
- **Delete:** To delete the user template from the library; also supports delete key.
- **Expand All:** Tree view control.
- **Collapse All:** Tree view control.

Canvas

The canvas provides an area to design the project screens. The size of the canvas view is same as that of the display screen.

Adding Elements to the Canvas

To add an element to the canvas, do one of the following,

- Double click the selected element from the Library.
- Drag the selected element and Drop them on the canvas to its required position.
- Canvas Context menu provides option to create Path Elements and Gradient Elements.

Note: The visual elements that are contained within the screen size provided are visible on the device display or emulator view.

Context menu actions for Canvas

Context menu actions on the canvas are different for different elements that come under the mouse click area.

- Context menu actions for screen
  - **Position:** X and Y coordinates of the mouse click point (convenient to drop visual elements in exact position).
  - **Paste:** perform paste actions for copied visual elements, image resources.
  - **Zoom In:** Perform zoom in actions for the screen/canvas view.
  - **Zoom Out:** Perform zoom out action for the screen/canvas view.
  - **Screen Boundary:** show the screen bounding rectangle.
  - **Center screen:** the screen view can be shifted by right click of the mouse on the canvas view and drag. Center screen action centers the view.
- Context menu actions for Visual Elements(excluding group elements and text box elements)
  - All the actions provided for screen
  - **Copy :** copy any visual element
  - **Cut:** cut any visual element
  - **Paste:** paste the visual element after performing cut or copy action
  - **Delete:** delete the visual element
  - **Send Backward:** decrease the layer number by one.
  - **Send to back:** decrease the layer number to zero.
  - **Bring Forward:** increase the layer number by one.
  - **Bring to front:** increase the layer number to the highest layer number in the project.
  - **Save as Template:** save the selected elements as template in the user templates
  - **Save to picture:** save the image of selected elements to image a file (.png format).
  - **Add Gradient Fill:** creates a gradient element using the selected visual element.
- Context menu actions for Group Elements
  - All actions provided for visual elements except Add Gradient Fill
  - **Ungroup:** ungroup the group elements in to individual visual elements and the group element get deleted, any function or hardware elements connected to this group element becomes invalid.
- Context menu actions for Text Box Elements
  - All actions provided for visual elements except Add Gradient Fill
  - **Auto Fit**

    - Auto fit to content: The text box is re-sized to fit the text.
    - Auto fit to text box: The text within the text box is resized to fit to the text box size.
- Context menu actions for multiple selection of Visual elements
    - **Group:** Creates a group element with all the selected visual elements on the canvas.
    - **Align Elements:** Aligns the visual elements with respect to the first element selected in the selection, depends on the order of elements selected.
        - Align bottom
        - Align center
        - Align left
        - Align right
        - Align top
        - Align vertical center
        - Align horizontal center
    - **Distribute Elements:** Distributes the visual elements
        - Horizontally
        - Vertically

  Note: Group action can be performed only on visual elements

- Context menu Merge actions for two overlapping Visual elements(excludes group, text box)
    - **Combine Elements**
    - **Subtract Elements**
    - **Intersect Elements**

Tips and Tricks for Canvas

1. When the visual elements are small, use the zoom in feature of the canvas to make manipulation of smaller elements easier.
2. As irregular polygon will show the exact point selected in the points list with a small circular mark around it to make it easier for the user to design irregular polygons.
3. Line shows the start point marked when the angle and length are selected.
4. If you want to align multiple items selected on the canvas use align elements action provided in the context menu with multiple elements selected.
5. If you want to distribute multiple items selected on the canvas use distribute action provided in the context menu with multiple elements selected.
6. To know the exact position on the canvas right click canvas for context menu; the first item in this menu shows the coordinates.
7. To know the exact number of the point of an irregular polygon use tool tip provided on the canvas; it displays the point number.
8. To know which is the start point and the end point of a line use the tool tip provided on the canvas.
9. To shift the canvas position right click the mouse and drag the canvas to the required position.
10. To work with overlapping visual elements, use check box provided on the left hand side of the visual elements in the function builder to hide the visual elements and lock their position.

11. To change the order in which the visual elements are overlapped, change their layer number.

Properties Editor

Properties of all designer elements that include visual elements, hardware elements and function elements can be edited using controls provided for the properties of each of these elements in the properties editor. Properties of visual elements can be changed using mouse handles on the canvas.

Every property of the designer element has a label to display the property name, control to change its property value and an error field/label which will display the validation errors if any. Some of the properties of the visual element are inter-dependent.

Function Builder

Function builder is designed to show the relation between each of the designer elements. Function builder is split into three parts one each for Visual Elements, Hardware elements, Function elements.

Function builder has three modes for displaying relationships between visual elements, hardware elements and function elements. To select the mode follow these steps,

1. Right click function builder just below the title bar, show element relationships.
2. Select the mode from this sub menu.
3. To change mode once this mode is enabled click on the elements header for respective relationship display mode.

- **Visual Elements Mode:** All visual elements in the project are enabled and selecting a particular visual element will show all connected function elements. Similarly clicking on the available function elements will show all connected hardware elements.
- **Function Elements Mode:** All function elements in the project are enabled and selecting a particular function element will show the connected visual element and also the connected hardware element.
- **Hardware Elements Mode:** All hardware elements in the project are enabled and a particular hardware element will show the connected function elements and selecting the function element will show the connect visual elements.

Context menu actions provided in the function builder

Context menu actions provided in the function builder also depend on the type of elements selected.

- Context menu actions for all elements
    - Select layer
    - Sort by
        1. Name
        2. Layer
        3. Ascending
        4. Descending

    - Select all
    - Select inverted
    - Select layer
    - Hide Selected
    - Copy
    - Paste
    - Cut
    - Delete
    - Save as template
- Context menu actions for multiple overlapping visual elements selected in function builder.
    - Group

Extra features for Visual Elements in Function builder

The context menu actions are common to visual elements, hardware elements and function elements. The visual elements in function builder are also provided with controls to change the visibility of the visual elements and display the layer number of the visual elements on the canvas.

Drop actions support

Function builder supports drop action for the following designer elements,

- Images: Image resources dropped from any other source are added as an image element on drop action performed on function builder.
- All elements provided in the library dropped in the function builder are added to the current screen.

Tool bar

Tool bar provided in the Design window of the Design studio provides some quick usability features,

- Switch between Home and Design window
- Create New File
- Open an existing project
- Save the current project
- Save the current project As
- Save a copy of the current project
- Center the current screen in the view
- Zoom in the current screen view
- Zoom out the current screen view
- Undo Design actions
- Redo Design actions
- Device state

Change Language Settings

PanelPilotACE Design Studio supports multiple languages (at present only supports UK English and US English). Language setting of the application can be changed using Help menu, change language action and then select the language. Application needs to be restarted on changing the language settings.

PanelPilotACE Emulator Window

The emulator window is provided to test the projects before uploading it to the device display. The emulator is designed with hardware elements for testing varying input and output values.

The controls provided on the Emulator window

- Alarm output channels
- PWM output cannels
- Analogue input channels
- Digital input/output channels
- Rotate screen
    - Landscape
    - Portrait
- Functions
    - Capture Screen
    - CPU Over usage
    - Memory over usage
    - Low battery state
- RS232 Send and Receive values update when the send receive actions are performed
- RS232 IO Error, Send Error and Receive Error simulating controls to test the error behavior.

PanelPilotACE Complex Widgets

Action Scheduler (Property Trigger)

This widget provides controls to schedule multiple actions in a specific order. The steps to be followed to add an action in to the action scheduler,

1) Click Add button
2) Select the action in the drop down provided for the action widget.
3) Can change the order of the actions added using the right most button for each of the actions widget.

Clear button is provided to clear all the actions in the action scheduler.

Boolean Expression Builder (Boolean Builder)

This widget provides controls to build a logical expression using the properties of elements used in the project, project variables and constant values. The steps to build a logical expression are,

1) Double click or right click and select add in the area provided for expression.

2) The expression area also provides a context menu to add, copy, paste, clear while building an expression.
3) Different types (Number, Boolean, String) of constants are provided, which can be used in constructing the expression.
   The current button is marked in orange and the syntax error in the expression is highlighted with button marked in red.

Change Properties (Action)

This widget provides controls to set changes in properties of elements with a view of the element and its properties in the dialogue. The steps to set a change in properties of element/elements used in the project are,

1) Double click on the element for which the properties are to be changed.
2) In dialogue that opens select the properties that need to be changed and the required value of the changes.
3) Once the required changes are set , user can test using preview button and re-select it to bring back the visual elements to normal state.
4) Clear button is provided to clear all the property changes set.
5) Debug button is provided to show the elements and the properties that are changed, with the new value set.

Logical Expression builder (Logic Builder)

This widget provides controls to build a logical expression or set of logical expressions together with respective action elements that perform the required action on the expression being evaluated to be true. The steps to create a logical expression are,

1) Add button to add an expression and the related action.
2) Every expression widget is provided with an Edit button to build an expression; The expression builder uses the same widget as that of Boolean builder.
3) Select the action to be performed if the set expression evaluates to true by selection the action element in the actions drop down provided with every expression.
4) The actions can be added using insert before, insert after options provided in the context menu of this scroll widget.
5) The index of the actions can also be changed using change index option provided in context menu for all the individual widgets added.
6) Clear button is provided to clear the entire expressions and actions list set.

Mathematical Expression Builder (Math Builder)

This widget provides controls to build a mathematical expression using the properties of elements used in the project, project variables and mathematical constants. The steps to create a mathematical expression are,

1) Double click or right click and select Add in the area provided for mathematical expression or click Add button.
2) Select the operators, functions and operands (property of elements, project variables, numbers, strings, value-mathematical constants) to construct the mathematical expression.
3) The context menu in the expression area provides insert before, insert after options to insert operators, functions or operands to the expression.
4) Clear button is provided to clear the entire expression constructed.

   The buttons marked red indicate syntactical errors and orange indicate the selected/current selected part of the expression.

Set Expression (Action – Set Rule)

This widget is provides controls to add in set of assignment expressions. The steps to be followed to add in assignment expression,

1) Double click or Right and select add in the area provided for assignment expression or click Add button provided.
2) Double click in the box provided (table widget) for left hand side of the assignment expression to add in the left hand operator.
3) Double click in the box provided (table widget) for right hand side of the assignment expression to add in the right hand operator.
4) Clear button is provided to clear the entire table widget.

PanelPilotACE Design Studio Short cut keys

Scope	Sub-Scope	Windows	Description	Condition
Global (The main window has to be visible)		Ctrl + N	Open a dialogue to create a new project	No other dialogue is visible
		Ctrl + O	Open a file dialogue to select a .pproj file to open	No other dialogue is visible
		Ctrl + S	Save the current project to file	1. The designer window is active 2. At least one project open 3. The current project is modified
		Ctrl + Shift + E	Export the current project to project template in a .pptemple file	1. The designer window is active 2. No other dialogue is visible 3. At least one project open

		F4	Validate the current project	1. The designer window is active 2. No other dialogue is visible 3. At least one project open
		F5	Preview the current project in the emulator	1. The designer window is active 2. No other dialogue is visible 3. At least one project open. If the current project does not have any validation error, the emulator dialogue will show, otherwise the validation error dialogue will show
		F6	Upload the current project to the current selected device	1. The designer window is active 2. No other dialogue is visible 3. At least one project open 4. t least one devices connected 5. There is a device selected. If the current project does not have any validation error, and the current project is compatible with the current selected device, the upload dialogue will show, otherwise the validation error dialogue will show
		F7	Open the function menu for the current device	1. At least one device is connected 2. There is one device selected 3. No other dialogue is visible
		Ctrl + F4	Close all projects	1. The designer window is active 2. At least one project open

		Ctrl + Q	Quit the designer application	No other dialogue is visible (any dialogue will block the application from quitting)
		Alt + F4	Close the current dialogue/window. If no dialogue is visible, it will try to close the designer application.	This is the system default short cut for quitting. There is no way to block and modify the shortcut.
		Escape	Close the current dialogue. In general, it is identical to pressing the Cancel/Close/No button, or the user clicks the close button in the title bar.	In some dialogues, the shortcut is disabled. The user must click on some button to close the dialogue, or the dialogue can close automatically.
		Ctrl + Z	Undo	1. At least one project open 2. The current focus widget does not has/use its own undo/redo functions (such as text edit) 3. The project is modified (undo/redo available)
		Ctrl + Y	Redo	
		Ctrl + D	Switch to the designer window	1. No other dialogue is visible 2. The welcome is not in floating state
		Ctrl + W	Switch to the welcome window	
		Alt	Show embedded shortcuts in the current UI	This is a system default key. All shortcuts embedded in menu, button, etc. will be highlighted. The actual key can be changed in the localization file.
		Space	Trigger the default action of a widget. For example, show the pop up of a combo box, press a button, toggle a checkbox/radio button, etc.	
		Enter	Press the default button in a dialogue (if set)	If a dialogue has a default button set, pressing enter is identical to press that button. The button may vary in different dialogues.
	Menu Bar	Alt + F	Show the file menu in the main window	No other dialogue is visible
		Alt + E	Show the edit menu in the main window	1. No other dialogue is visible

				2. The designer window is the active
		Alt + W	Show the window menu in the main window	No other dialogue is visible
		Alt + S	Show the settings dialogue	No other dialogue is visible
		Alt + H	Show the help menu in the main window	No other dialogue is visible
	Menu Bar - File	N	Open a dialogue to create a new project	The file menu is visible
		O	Open a file dialogue to select a .pproj file to open	The file menu is visible
		R	Expand the recent projects menu	1. The file menu is visible 2. At least one recent projects
		S	Save the current project to file	1. The designer window is active 2. At least one project open 3. The current project is modified
		X	Quit the designer application	No other dialogue is visible (any dialogue will block the application from quitting)
	Menu Bar - Help	H	Open the online help	
		A	Open the about dialogue	
		W	Open the product website	
	Device Function Menu	I	Identify device	
		H	Show a dialogue of the selected device's information	
		D	Show the device configuration dialogue	
		F	Show the device fonts dialogue	
		U	Show a file dialogue to select a .ppsw file to upgrade the device software	
		R	Reboot the selected device	
	Device Function Menu	Space	Show the context menu	An item is selected in the current list widget

	- Manage Device Fonts Dialogue	Escape	Clear selection	At least one item is selected in the current list widget
		Shift + Plus (Main keyboard) Plus (Numpad)	Add the selected fonts to "Fonts to be added to device" list	1. The "All user-added fonts" list widget is active 2. At least one item is selected
		Shift + Plus (Main keyboard) Plus (Numpad)	Unmark the selected fonts in "Available fonts on device"	1. The "Available fonts on device" list widget is active 2. At least one item is selected 3. Some selected items are marked for removal (strike out and red colour)
		Delete Backspace	Mark the selected fonts for removal	1. The "Available fonts on device" list widget is active 2. At least one item is selected
		Delete Backspace Minus	Remove the fonts from "Fonts to be added to device"	1. The "Fonts to be added to device" list widget is active 2. At least one item is selected
	New Project Dialogue	F1	Show the project's identifier information dialogue	The label "Name:" or the name edit or the orange question mark button is active
		F1	Show the description dialogue of the selected device	1. The label "Device Model:" or the device model combo box or the blue exclamation button is active 2. A device model is selected
	Full Screen Colour Picker	Escape	Cancel the action, no colour will be picked	Originated from a colour widget through the Pick Colour action (in context menu)

PanelPilotACE Mouse Double Click and Drag N Drop Support

Scope	Sub-Scope	Content Type	Condition	Effect

Global	Device Manager Frame	Device software	A .ppsw file, and a device is connected and selected	Use the .ppsw device software to upgrade the device (compatibility will be checked later)
	Manage Device Fonts Dialogue	Standard list item	Drag fonts from user added list to device (2 list widgets)	Add the selected fonts to device
	Device Configurator	An image file	1. The image must jpg, jpeg or bmp 2. The image must be dropped to the splash screen image path edit or the browser button	Select an image to be used as the splash screen image
	Settings - Fonts	Font file(s)	1. The font file(s) must be .ttf or .otf 2. Drag the files to the area within "Application Fonts" group box (any list widget is OK)	Add the fonts to be used by the designer application. The fonts can be later transferred to device to be used on device. Invalid or duplicate fonts will not be added.
	New Project Dialogue	A folder	Drag a folder to the Path line edit	Set the path to the folder
Welcome	Templates	pptemplate file(s)	Any file with .pptemplate extension will be accepted. We don't validate the file(s). The file(s) will be validated in the actual importing process.	Import template(s). Only project template(s) can be imported.
	User Templates - Export	An image file	Drag an image (.bmp, .jpg, .jpeg, .png) to the preview image line edit	Select the image as the preview image for the project template
Designer	Function Builder	Element template	Dragged from Library	Add the template's content to the current screen, visual elements will be added to the center of the screen
		Image resource	Dragged from Project Browser (this function is currently disabled due to some bug in Project	Create an Image element with the source set to the image resource. The image element will try to use the

			Browser)	original image size but limited to 1000x1000. The image element is added to the screen's center.
		Valid image file(s)	Valid image files from external	Valid image files will be imported as image resource(s) first. Then create image element(s) which are using the imported image resource(s), or existing image resource(s) if already imported. All image element(s) will be added to the screen's center.
	Project Browser	Files	1. Contains at least one ppproj file 2. Drop to anywhere	Open all included ppproj file(s) as project, no image resource will be imported
		Files	1. Does not contain any ppproj file, and contains at least one valid image file 2. Drop to the area within a project (under the project's root tree item)	Import the image file(s) as image resource(s) to the project at the dropped position
		Folder(s) and/or file(s)	1. Contains at least one ppproj file or at least one folder contains ppproj file 2. Drop to anywhere 3. If a folder contains multiple ppproj files, the folder will be ignored 4. The ppproj must be directly in the folder (cannot in sub folder)	Open all included ppproj file(s) in the selection, or in the folders in the selection. No image resource will be imported. This is a fast method to open multiple projects.
		Image resource	1. Image resource from another project 2. This function is currently disabled because the dragging image resource is disabled	Import an image resource from another project
		Export Template	Same as in Welcome	

	Library	pptemplate file(s)	Any file with .pptemplate extension will be accepted. We don't validate the file(s). The file(s) will be validated in the actual importing process.	Import template(s). Only element template(s) can be imported.
	Canvas	This is the same as in Function Builder, except all visual elements will be added and centered to the dropped position on screen.		
	Image Resource Dialogue	A valid image file	A valid image file to the whole dialogue	A fast method to select an image file
		A folder	Drag a folder the Path line edit	A fast method to change the folder for searching images
	List-Style Widget (Group Element and Property Trigger)	List widget item	Drag a single item to other position within the same list widget to reorder the list (must press the most right button)	Reorder the list

Errors and Warning

Design Studio errors and warning

Error Message or Warning	**Trouble shooting Information**
An unknown error occurred	Device Configurator, select upgrade device software and if this action is interrupted by any other process.
Are you sure you want to delete template %1?	Welcome window, user templates, delete option clicked in context on any of the available templates will confirm the remove action; can choose to cancel this action.
Are you sure you want to delete the item?	When delete action is performed on the element templates in the library, this action is confirmed with this message. You can choose to cancel this action.
Are you sure you want to reboot the device?	Device configurator, reboot device action when clicked is confirmed using this message. You can choose to cancel this action.
Cannot find application directory	Upload project (F5) performed on a project and if the application directory is not created on the device.
Failed to acquire file lock	When an application instance is already running and tries to open another.
Failed to create picture from selected elements	Canvas perform 'save as picture' action on the current screen elements, if this action created an empty image gives this message.
Failed to create project at %1	Create project using project templates in welcome window, if project could not be created due to invalid project template.

Failed to create temporary directory	Save as project template performed on a project creates a temporary directory to store the project and create the project template file, if there was problem creating this temporary directory.
Failed to export element template at path %1	Export template action performed on library, user defined templates fails due to incorrect path
Failed to export project template at path %1	Export as project template performed on project fails due to incorrect path.
Failed to import template %1	Import project template or element template file due to incorrect path.
Failed to prepare temporary files	Export template action could not be completed as it was not able to create temporary files.
Failed to remove temporary directory at path %1	Export template action could not remove the temporary directory path created.
Failed to replace %1	'Save as Picture' action performed on canvas elements fails as the new name given to the picture file already exists and this action is not able to replace the old file with the new image.
Please specify a name for this element template	'Export as template' action on user defined library elements should specify a name for the exported template file.
Please specify a name for this project template.	'Export as template' action on projects should specify a name for exported template file.
Please wait until the configuration is finished	Device configurator, click device configuration and start configure. This action cannot be aborted until configure action is completed.
Please wait until the upgrade is finished	Device configurator, click upgrade device and once upgrade process begin you cannot abort the process or close the dialogue until upgrade is completed.
Please wait until the upload is finished	Once the Upload (F6) for current project in the designer is initiated you cannot abort the process or close the progress dialogue until the upload process is complete.
The application language is changed, please restart the application to take effect.	Change in language settings will need the application to restart to apply the changes.
The application language is changed, you must restart the application to take effect. Would you like to close the application now?	Change in language settings will need the application to restart to apply the changes.
The calibration directory does not exist	Device configurator, on configure action initialized if the calibration directory does not exist on the device.
The calibration file of this device already exists. Would you like to overwrite it?	Device configurator, configure device action, on back up calibration file selected and if the calibrations file already exists on the device.
The calibration file of this device does not exist.	Device configurator, configures device action, on restore calibration file selected and if the calibrations file does not exist on the device.
The following files are not valid templates: %1	Import templates action or Drag-and-Drop templates into the designer, if the template files are not valid.
The project directory is inaccessible.	If recently used project is deleted outside the design studio and in Welcome window, recent projects, select a project

	from the available list which is already deleted or does not exist anymore.
Upgrade finished, the device will reboot. This dialogue box will automatically close.	Upgrade device action when completed for the device will show this message in the upgrade device progress dialogue.
Upload finished, the device will reboot. This dialogue box will automatically close.	Upload action (F6) on the current working project in the design studio will show a progress dialogue which will show this message on upload project to the device is complete.
Would you like to import the following element template? %1	Drag-and-Drop performed on single or multiple element templates.
Would you like to import the following project template?	
You must upgrade the device software to at least %1 to use this project.	Upgrading the software might include two updates or one update. One for the design software and the other for the device software. If the user upgrades only the design studio and skips the upgrade procedure for the device software this message is displayed asking the user to upgrade the device software.
%1 is the same as system project template %2.	Importing project template which already exists as a system template in the design studio.
Cannot open the application style sheet	Application look and feel settings file is damaged or could not be opened.
Failed to communicate with the application	Could not open the requested file in the design studio as it failed to establish communication with the application.
Font file %1 could not be loaded	The font files related to the application are damaged or do not exist, could not be loaded.
Fonts directory does not exist	Font's directory storing the font files related to application does not exist.
Fonts directory is empty	Font's directory storing font files exists, but is empty.
The Project files directory cannot be created	Application creates a folder to store the project files, if this files directory could not be created.
The application path does not exist	The application path which stores the application related information could not be found.
The calibration files directory cannot be created	The application creates a file structure to store the calibration information for the device, if this directory could not be created.
The user directory cannot be accessed	The application creates projects folder to store the user created project using the Design studio, if this directory cannot be accessed.
The user directory cannot be created	The application creates projects folder to store the user created project using the Design studio, if this directory could not be created.
There was a problem loading the application tutorials.	The application getting started tutorials could not be loaded.
There was a problem loading the emulator	The emulator initialization was not successful.
There was a problem loading the hardware configurations	The hardware configuration for the application could not be loaded.

There was a problem loading the plugins	The plugins directory could not be loaded.
There was a problem loading the project versions log	The project versions log for upgrading the projects was not loaded
There was a problem loading the templates	The project templates and element templates could not be loaded.

Project related errors and warning

Error Message or Warning	Trouble shooting Information
The following image already exists in the project %1	Adding image files, if the image already exists in the project's image resources.
The project "%1" has been modified. Do you want to save your changes?	The current working project in the design studio is changed and if user tries to close the design studio without saving the project file.
The project "%1" is already deleted	Try to close the project which is already deleted.
The project cannot be opened because the following image cannot be found: %1	The image resources of the project are deleted for a saved project file and try to open the project in the designer.
The project directory is inaccessible	Try to open a project in recent projects tab in welcome window and the project file is already deleted.
The project file cannot be found	Try to open a project file using recent projects link in the Design window, file menu and the project file is already deleted.
The project file is damaged	Trying to open a project in the design studio and if the project has some invalid objects not recognized by design studio.
Are you sure you want to delete this image?	When delete action is performed on the image resource of the project, this is action is confirmed with this message. You can choose to cancel this action.
The project name cannot contain these characters: %1	Renaming the project and the entered new name is invalid and does not satisfy the validity conditions.
The project name cannot start or end with '.'	Renaming the project and if '.' is used at the start or end of the project id name.
The project name cannot start or end with white space	Renaming the project and if white space is used at the start or end of the project id name.
The project name is invalid	Renaming the project and the project name entered does not satisfy the validity conditions.
This project is already open	Open new project and the new project selected is already open in the design studio
This project may have been created in a later version of %1.You can still open it, but the project may not work properly, and data may lose if you change the project's name, image resources or save the project. Would your like to open it anyway?	Try to open a project which was created by a newer version of the Design studio.

This project was created in an earlier version of %1.You must upgrade it first	Try to open a project which was created by an older version of the Design studio.
Unknown Project Version	Try to open a project whose version number is modified externally and is not recognized by the design studio.
This name is reserved	Rename project with a standard reserved key, for the list of reserved key words refer validity conditions.
At least one screen is required	A project has no screen added.
The following characters are not allowed: %1	Open new project and entered new name of the project has invalid characters.
The project name cannot contain these characters: %1	The name of project should not contain the invalid set of characters.
The project name cannot contain this character: %1	Project name should follow some naming conventions.
The project name cannot have more than 248 characters.	Project name should follow some naming conventions.
The project name cannot start or end with '.'	Project name should follow some naming conventions.
The project name cannot start or end with white space.	Project name should follow some naming conventions.
The project name is invalid.	Project name should follow some naming conventions.
Are you sure you want to delete this project variable?	When delete action is performed on the project variables, action is confirmed with this message. You can choose to cancel this action.
Are you sure you want to delete this screen?	When delete action is performed on the project screen, action is confirmed with this message. You can choose to cancel this action.
%1) There are validation errors in %2 (%3). Please fix them and try again	Preview F5/Validate F4 performed on Project shows this error if the project elements are not valid.
%1) There is a validation error in %2 (%3). Please fix it and try again	Preview F5/Validate F4 performed on Project shows this error if any project element is not valid.
Cannot delete the default screen	Project browser; try to delete the screen which is set as default screen. Default screen in the project cannot be deleted. Change the default screen of the project and then delete the screen.
Cannot delete this image resource because it is used by some image element in a group	Delete action performed on image resource in the project browser will show this information if the image is used by any image element in the project.
Cannot detect the project's version	When open project action is performed and if the project to be loaded has a version number which is not recognized by the Design studio, this message is displayed.

Failed to save copy	File ‘save copy as’ action performed failed.
File name cannot contain these characters: %1	Project name should follow some naming conventions.
Please supply a name for your project	‘New Project’ action should enter a name for the new project to be created.
The directory you have chosen does not exist.	‘New Project’ action, if the directory specified for the new project does not exist.
The following image has an unsupported filename:\n %1	On adding image resource to the project and if the image format is not supported.
The file already exists at path: %1	Renaming the project in the project browser, if project with new name already exists in the projects path.
The following project cannot be opened, the project file may be damaged:\n %1	‘Open Project’ action is not able to load the project as some of the project elements are not recognized by the Design studio.
The name cannot start or end with '.'	Project name should follow some naming conventions.
The name cannot start or end with white space	Project name should follow some naming conventions.
The project %1 has been modified. Do you want to save your changes?	Close the design studio without saving the working projects will show this message.
The project %1 is already deleted	The project which is open in the design studio if deleted outside the design studio will show this message on performing any save or close action on the project.
The project cannot be opened because the following image cannot be found: %1	The image resources of the project are deleted and project cannot be loaded in the design studio.
The project file cannot be found.	Trying to open a project in design studio which is already deleted or does not exist.
The project file is damaged	Trying to open a project in design studio which has some elements that are not recognized by the design studio.

Project Variables related errors and warning

Error Message or Warning	**Trouble shooting Information**
Project variable with name %1 already exists in the current project.	Project variables added to the project should have unique name.
The name cannot have more than 248 characters.	Project variables name cannot have a length more than these many characters.
The name is not unique (Project Scope).	Project variables defined in a project are available to all the screens in the project so their name should be unique for the entire project.

Screen related errors and warning

Error Message or Warning	Trouble shooting Information
At least one element is required.	Upload project is performed with a screen with no elements on it.
The screen's name cannot have more than 247 characters.	Screen name cannot have more than 247 characters.

Element related errors and warning

Element	Error Message or Warning	Trouble shooting Information
Image	An image named %1 in the project is the same as this image	Adding an image resource which already exists in the project with another name.(adding image resource/image element using Copy and Paste, Drag-and-Drop)
	An image named %1 is already in the project. Please choose another image.	Adding an image resource which already exists in the project. (adding image resource/image element using Copy and Paste, Drag-and-Drop)
	An image resource with name %1 already exists.	Adding an image resource having the same name as the one that already exists in the project.(adding image resource/image element using Copy and Paste, Drag-and-Drop)
	The image file is invalid.	The image file is damaged.
	The image file you have chosen does not exist.	The image file is deleted outside the design studio.
	The image format of %1 does not match its file extension.	The image content and file extension do not match, or invalid image resource.
	The image name cannot have more than 255 characters.	Image name is not valid
	The image name is invalid.	Image name does not satisfy validity conditions.
	The image source is not set.	Image resource of the project the source is not set.
	The image's name cannot contain these characters: %1	Image name is not valid
	The image's name cannot contain this character: %1	Image name is not valid
	The image's name cannot have more than 255 characters (including the extension).	Image name is not valid
	The name is in the wrong format. Please ensure you include the image's file extension: %1	Image name is not valid
	The name must have the same file extension as the image file.	Image file and the image file name extension do not match.
	This is an invalid image. Please choose another image.	The image resource set for the image element is not valid.
	Unknown Format	The image file added is not supported by the design studio application.

	An element with name %1 already exists in the current screen.	Adding an element to the project screen and if the element with this name already exists on the screen.
	Image %1 will be removed from the project.	'Remove unused image' action performed on image resources will show a confirmation message before deleting the image files. You can choose to cancel this action.
	Image resource %1 already exists in the project, Please rename it and reapply the template.	User template applied on to the screen image resource with the same name as in the current project, to store both the images in the project you need to rename the image in the project and then apply the user template.
	The following image is invalid or its extension does not match the image format: %1	Image resources added to the project are invalid; the image format does not match the file content.
	The following images already exist in the project %1	Image resources added to the project already exist in the project.
	The following images have an unsupported filename: %1	Format of the Image resources added to the project are not supported by the Design studio.
	The following images will be removed from the project: %1	'Remove unused image' action in the project browser will show a confirmation messaged before removing unused images from the project.
	The image name is invalid	Image name is not valid
	The image's name cannot contain these characters: %1	Image name is not valid
	The image's name cannot contain this character: %1	Image name is not valid
	You must supply the file extension %1	Renaming an image resource in project browser/property editor should provide a valid extension to the image file name.
Logic Builder	Cannot find a close bracket that matches the open bracket at %1	The logical expression built using logic builder, which has syntactical error
	Cannot find a close bracket that matches this open bracket	The logical expression built using logic builder, which has syntactical error
	Cannot find an open bracket that matches the close bracket at %1	The logical expression built using logic builder, which has syntactical error
	Cannot find an open bracket that matches this close bracket	The logical expression built using logic builder, which has syntactical error
	Component at %1 is an invalid property.	The element property used in building logical expression is not valid.
	Component at %1 is an invalid variable	The variable used in building logical expression is not a valid variable.
	Component at %1 must be a close bracket or operand	The logical expression built using logic builder has syntactical error.
	Component at %1 must be a value or open bracket	The logical expression built using logic builder has syntactical error.

	Component at %1 must be an open bracket or value	The logical expression built using logic builder has syntactical error.
	Missing close bracket.	The logical expression built using logic builder has syntactical error.
	Missing value or expression.	The logical expression built using logic builder has syntactical error.
	Missing variable/property or expression between brackets at %1 and %2.	The logical expression built using logic builder has syntactical error.
	Missing variable/property or expression.	The logical expression built using logic builder has syntactical error.
	The expression is incomplete.	The logical expression built using logic builder has syntactical error.
	The first component must be open bracket or value.	The logical expression built using logic builder has syntactical error.
	This component is not a valid property	The element property used in building the expression is not valid.
	This component is not a valid variable	The project variable used in building expression is not valid
	This component must be close bracket or operand	The syntax error in the built expression.
	This component must be open bracket or value	The syntax error in the built expression.
	This component must be value or open bracket	The syntax error in the built expression.
	Undefined Boolean	The Boolean variable used in the expression is not defined.
	Undefined Number	The number variable used in the expression is not defined.
	Undefined Property	The element property used in the expression is not defined.
	Undefined Variable	The project variable used in the expression is not defined.
	Cannot find a close bracket that matches the open bracket at %1.	The syntax error in the built expression.
	Missing variable/property or expression between brackets at %1 and %2.	The syntax error in the built expression.
	The element must be different from the Logic Builder itself	The link set to action true and action false actions cannot be the same logic builder.
	No expression set.	The expression is not set for the logic builder.
	The expression is incomplete	The expression set in the logic builder is not valid.
Visual Element	Cannot find visual element %1 in the screen	The visual element used in any of the function element is deleted or does not exist in the screen.

	The colour is invalid. Please choose a valid colour	The colour set for the visual element is invalid.
	The size is invalid	The size of visual element is not valid.
	The corner radius must be between 0 and 100.	The corner radius must be within this range.
	The corner radius must be smaller than or equal to %1 px.	The corner radius value must be smaller or equal to this value to render the element in proper shape on the canvas.
	The angle must be larger than or equal to 0, and less than 360.	Visual elements the rotation set must be within the specified range.
	The opacity must be between 10% and 100%	Visual elements the opacity set must be within the specified range.
Group Element	Please fix validation error in element %1 before grouping	Group Element action can be performed on only valid visual elements, if visual element like image have validation error.
	Please fix validation errors in the following elements before grouping:\n %1	Group Element action can be performed on only valid visual elements, if multiple visual elements like image have validation error.
Function Elements	The function element is not set	The link to a function element is not set. If no function element of the required type exists in the screen you need to create one.
	The hardware element is not set	The link to a hardware element is not set. If no hardware element exists in the screen you need to create one.
	The link '%1' cannot be found	If the link set to an element exists but the element does not exist in the screen anymore.
	The link is not set	If the link to an element is not set.
	The property link '%1' cannot be found	If link to a property is already created but the element property does not exist anymore.
	The property link has not been set.	The link to a property is not been set.
	The two values cannot be the same.	Range values set for scale meter (scaling range), rotating needle (angle), out of range behavior (Voltage scaling), analogue input (voltage scaling) both range values cannot be the same.
	The value is not within range	The valid value range set for voltage scaling should be within the actual voltage scale set (within value at min voltage and value at max voltage).
	The visual element is not set	The link to a visual element is not set.
	Cannot find PWM output element %1 in the screen	The link set to a PWM output element exists but the output element does not exist anymore.
	Cannot find action element %1 in the screen.	The link set to action element exists but the action element does not exist anymore.
	Cannot find alarm output element %1 in the screen.	The link set to an alarm output element exists but the alarm output element does not exist anymore.

	Cannot find digital input/output element %1 in the screen.	The link set to digital input output element exists but the digital input output element does not exist anymore.
	Cannot find digital output element %1 in the screen.	The link set to digital output element exists but the digital output element does not exist anymore.
	Cannot find element %1 in the screen.	The link to an element is used in a function element but the element does not exist anymore.
	Cannot find group element %1 in the screen.	The link to a group element exists but the group element does not exist anymore.
	Cannot find hardware element %1 in the screen.	The link to a hardware element exists but the hardware element does not exist anymore.
	Cannot find output element %1 in the screen.	The link to an output element exists but the output element does not exist anymore.
	Cannot find project variable %1.	The link to a project variable exists but the project variable does not exist anymore.
	Cannot find screen %1 in the project.	The link to a screen exists but the screen in the project does not exist anymore.
	Cannot find text element %1 in the screen.	The link to a text box element exists but the text box element does not exist anymore.
	Cannot find visual element %1 in the screen.	The link to a visual element exists but the visual element does not exist anymore.
	The action element is not set	Link to an action element is not set. If no action element of the required type exists in the screen you need to create one.
	The from value and to value must be different	The valid value range set for voltage scaling, both the values cannot be the same.
	The group element is not set	Link to a group element is not set. If no group element exists in the screen you need to create one.
	The hardware element is not set	Link to a hardware element is not set. If no hardware element exists in the screen you need to create one.
	The indicator element is not set	Link to a visual element which will be set as indicator is not set.
	The output element is not set	Link to an output element is not set.
	The range is not set	If the range value is empty.
	The reset element is being used by %1	Link to a visual element which will be set as a reset button cannot be used by any other control elements like, 1. Alarm Indicator element used to reset alarm for manual type. 2. Switch that uses on switch element and off switch element and 3. Switch with Indicator that uses visual element to control the on and off

		behavior of the output. 4. Control switch that uses visual element to increase and visual element to decrease the PWM output value.
	The screen is not set	Link to screen is not set.
		The screen link set in the screen loader
	The visual element is being used by %1	The visual elements cannot be used by any other function elements if it is used by Analogue clock or Date and time display.
	The visual element's position and rotation cannot be changed because it is being used by %1	Change properties function element cannot change the position and rotation of visual element which is used by analogue clock
	The visual element's position and rotation should not be changed by %1	Analogue clock cannot use visual element whose rotation and position is being changed by other function elements.
	%1 is neither an alarm output element nor a digital output element	Switch Function elements the output hardware element should be linked to either digital output or alarm output.
	%1 is not a PWM output element	Output Controller and Control Switch function elements should be connected to PWM output element only.
	%1 is not a digital input/output element.	Digital Channel Indicator function element can be connected to digital input/output element only.
	%1 is not a digital output element	Digital output controller function element should be connected to digital output element and is controlled by an analogue input element.
	%1 is not a group element.	Group meter function element can be applied on visual element which is a group element only.
	%1 is not a text element	Date and time display and Digital display function elements can be linked to visual elements which are Text box element only.
	%1 is not an Action (Load Screen) element.	Set Rule function element provides link to screen to perform load screen action, if this link to screen is not valid.
	%1 is not an Action (Property Changes / Load Screen / Set Rule) or Logic Builder element.	Logic Builder function element is connected to two action elements which should one of Property changes, Load screen or Set rule.
	%1 is not an Action (Property Changes) element.	Set Rule can be linked to Change properties action element and it should be a valid link.
	%1 is not an alarm output element	Alarm function element connected to alarm output element should be a valid link.
	%1 is not configured as INPUT or OUTPUT	Digital channel indicator function element connected to digital input output element can be configured to INPUT/OUTPUT signal type

	The PWM output element is not set	Link to PWM output element is not set.
	The alarm output element is not set.	Link to alarm output element is not set.
Hardware Elements	The minimum value cannot be greater than the maximum value.	Analogue input the voltage range set for the element should be valid.
	The minimum value must be smaller than the maximum value.	Analogue input the voltage range set for the element should be valid.
	The PWM output element is being used by %1	The PWM output elements added should use unique output channels numbers. If the channel number is already used by another PWM output element this message is displayed.
	The alarm output element is being used by %1	The Alarm output elements value cannot be set or controlled by two different function elements.
	The digital channel is not configured to receive an OUTPUT signal.	The digital input output element used in functions that set the output value should configure the digital input output channel number that is configured to take OUTPUT signal type.
	The digital input/output element is not set	Link to digital input output element is not set.
	The digital output element is being used by %1	Digital output elements values cannot be set or controlled by two different function elements.
	The digital output element is not set	Link to digital output element is not set. If no digital output hardware element exists in the screen you need to create one.
	The element is not in a project	The link set to an element exists but the element does not exist anymore.
Alarm	The indicator and reset elements cannot be the same	Alarm function element the link to indicator (visual element) and the reset element (visual element) should be two different visual elements.
Colour Meter	The visual element does not have a border property	Colour meter changes colour of the border and also the colour of the visual element. Border property does not exist for the visual element that it is connect to (invalid link).
	The visual element does not have a colour property	Colour meter changes colour of the border and also the colour of the visual element. Colour property does not exist for the visual element that it is connect to (invalid link).
Control switch	The visual element is being used by the decrease switch element and level indicator element	Control switch uses link to three visual elements. All these visual element link need to be different.
	The visual element is being used by the decrease switch element.	Control switch uses link to three visual elements. All these visual element link need to be different.
	The visual element is being used by the increase switch element and	Control switch uses link to three visual elements. All these visual element link need to

	level indicator element	be different.
	The visual element is being used by the increase switch element	Control switch uses link to three visual elements. All these visual element link need to be different.
	The visual element is being used by the level indicator element	Control switch uses link to three visual elements. All these visual element link need to be different.
Screen Loader	The screen must be different from the current screen	The screen link used for screen loader should not be the same as the current screen.
Set Rule	The left operand must be different to the right operand	Rule set cannot have the same operand on the both sides of the assignment operator.
	The left operand's type is undefined	The left operand's type of the rule is not defined.
	The right operand's type is undefined	The right operand's type of the rule is not defined.
	There are errors in the list, would you still like to save the list?	The lists of rules created are not valid and confirms if you still want to save the invalid list of rules.
	There is an error in the list, would you still like to save the list?	The rule in the list created is not valid and confirms if you still want to save the invalid list.
	Cannot assign value to itself.	The left side of the rule and the right side cannot have same operands.
	Duplicate expressions found.	The rule list set has duplicate set of rules.
	Element %1 does not have runtime property %2.	The operand used on the right hand side of the rule is a function element's property and the function element set does not have any runtime properties.
	The left part is invalid	The left part of the rule is invalid.
	The left property is not assignable	The property set on the left hand side of the rule is a read only property.
	The left property is not set	The element is selected for the left hand side of the rule but the property is not set.
	The left property's element is not set	The element is not set for the left hand side of the rule.
	The left variable is not set	The variable is not set for the left hand side of the rule.
	The right part is invalid	The right hand side of the rule is invalid
	The right part is not a valid Boolean value	The right hand side of the rule is Boolean but is not valid.
	The right part is not a valid number	The right hand side of the rule is not a valid number.
	The right property is not set	The right hand side of the rule, element is set but the property is not set.
	The right property's element is not set	The right hand side of the rule, element is not set.
	The right variable is not set	The right hand side of the rule is not set.

	The rule is not set	The rule is not set and is empty.
Switch	The element is being used by the switch off element	Switch, visual element set as switch on element is also used by switch off element (Cannot be the same visual element).
	The element is being used by the switch on element	Switch, visual element set as switch off element is also used by switch on element(Cannot be the same visual element)
Switch with Indicator	The element is being used by the indicator element	Link to a visual element which will be set as switch visual element cannot be used as indicator element.
	The element is being used by the switch element	Link to a visual element which will be set as indicator visual element cannot be used as switch element.
Designer Elements(includes visual , hardware, function elements, project variables and screen)	The name cannot be the same as the project variables.	Screens, Project variables and image resources are added to the project and should have unique name in the project. The other visual elements, hardware elements, function elements are added to the screen and should have unique name in the screen.
	The name cannot be the same as the screen's name.	Screens, Project variables and image resources are added to the project and should have unique name in the project. The other visual elements, hardware elements, function elements are added to the screen and should have unique name in the screen.
	The name cannot have more than 255 characters.	Visual elements name cannot have more than 255 characters.
	The name cannot start or end with '.'	Visual elements name should be valid.
	The name cannot start or end with white space.	Visual elements name cannot start with a white space.
	The name is in the wrong format. Only letters, numbers and underscore are allowed. The first character must be a letter.	Elements name should be valid.
	The name is in the wrong format. Only letters, numbers and underscore are allowed. The first letter must not be capitalized.	Elements name should be valid.
	The name is in the wrong format. Only letters, numbers and underscore are allowed.	Elements name should be valid.
	The name is in the wrong format. The following character may not be used: %1	Elements name should be valid.
	The name is in the wrong format.	Elements name should be valid.
	The name is invalid.	Elements name should be valid.

	The name is not unique.	Elements name should be unique to the screen.
	The name must be unique.	Elements name should be unique to the screen.
	The name must have at least 2 characters.	Elements name should have at least 2 characters.
	The name must not be empty	Elements name cannot be empty.
	The type is not supported.	Element properties that are not recognized by the design studio.
	The name cannot have more than 255 characters.	The name of the library elements added to the design studio should not exceed 255 characters.
	The name is not unique.	All the elements in the project need to have unique name. Project Scope : screen name, project variables Screen Scope : visual elements, function elements, hardware elements
	The name must have at least 2 characters	All screen, project variables, visual elements, function elements and hardware elements names must have at least two characters.
	The name must not be empty	The name of all the design elements should not be empty.
	The name must start with a letter, and only letter, number and underscore are allowed	Elements name should be valid.
	This name is reserved	Renaming project, screen, project variables, visual elements, hardware elements, function elements and user defined elements cannot use any reserved words.
Text Box	The supported languages list is read from the font file, the actual language may not be supported.	
	The text box is too small, please increase the size to a minimum of %1x%2	The text box element is resized to a very small size.
Out of Range behavior	Duration of one blink, must be shorter than the interval	Behavior type is blink and duration of blink is shorter than the interval for blink set.
	Missing required information.	Behavior type not set this **message** is displayed
	The blink duration is invalid	Behavior type is blink and the blink duration is not valid.
	The blink duration is not set	Behavior type is blink and the blink duration is not set.
	The blink duration must be between 0.1 and %1	Behavior type is blink and the blink duration must not be out of the mentioned range.
	The blink interval must be between 0.2 and 10.0	Behavior type is blink and the blink interval must not be out of the mentioned range.
	The number of blinks is invalid	Behavior type is blink and if number of blinks set is not valid value.
	The number of blinks is not set	Behavior type is blink and if number of blinks is

		not set for the visual element.
	The scale factor must be between -10000% and 10000%	The scale factor is not within the valid range.
	The scale origin is invalid	Behavior type is Zoom in/Zoom out and the scale origin is invalid.
	The visual element cannot be an image or group	Behavior type is change colour then visual element set cannot be image or group element.
	The visual element does not support text	Behavior type is Show message then the visual element set should be a text box element.
	The fixed point is invalid	The fixed point set for the visual element's behavior is not valid.
Change Properties	Empty element name found in list.	Action – change properties, the list of properties to be changed for elements where element name is set empty (invalid).
	Empty property name found in list for element %1.	Action – change properties, this list of properties to be changed for elements where the property name set in the list does not exist.
	No property change is set.	The change properties list is empty.
Gradient Elements	Gradient colours cannot be all the same	Gradient colours set for the gradient element cannot all be same, for this case you can use a simple visual element without gradient feature.
	Gradient colours cannot be all transparent	Gradient colours set for the gradient element cannot all be transparent, instead can set the element invisible.
	Gradient stop at position %1% already exists	The gradient stop added is already defined in the gradient stops.
	If the given focal point is outside the circle defined by the center point and radius, it will be re-adjusted to lie at a point on the circle where it intersects with the line from the center to the focal point	This is applicable to Radial gradient
	The gradient stops cannot have more than %1 stops	If the gradient stops exceeds the maximum number of stops. (0 – 100)
	The gradient stops must have at least 2 stops.	There must be at least 2 stops for a linear gradient.
	The start position must be different from the final stop position.	The start point and final stop point for linear gradients cannot be same.
Irregular Polygon	The size is too small.	If the size is too small for irregular polygon
	You cannot have more than %1 points	The maximum number of points an irregular polygon/regular polygon can have.

Emulator dialogue errors and warnings

Element	Error Message or Warning	Trouble shooting Information
Analogue	The range is too small!	If the range set for analogue input is too small.

input(settings dialogue)		
	The range is too small, the minimum precision is %1	The analogue input in the emulator has a slider control and is provided with settings button to set the input value range and it's precision. The range set should be larger than the precision set.
Analogue Clock	The visual element is being used as the hour and minute hand by the clock	Analogue clock should be linked to three unique visual elements.
	The visual element is being used as the hour and second hand by the clock	Analogue clock should be linked to three unique visual elements.
	The visual element is being used as the hour hand by the clock	Analogue clock should be linked to three unique visual elements.
	The visual element is being used as the minute and second hand by the clock	Analogue clock should be linked to three unique visual elements.
	The visual element is being used as the minute hand by the clock	Analogue clock should be linked to three unique visual elements.
	The visual element is being used as the second hand by the clock	Analogue clock should be linked to three unique visual elements.
Emulator	The emulator cannot be opened. An error occurred.	If the emulator dialogue could not create.

Installing and Upgrading the Software

Panel Pilot ACE Design software is available for download. Once downloaded follow the installation setup guide to install the software.

Installer Features

The installer features,

- Double click installation setup file will also install the device driver. After installation Plug SGD 43-A in and have it recognized by the computer.
- Upgrade to new version of the software: Double clicks the single installation setup and have the old software removed and new software is installed without having to go into the control panel or similar on the PC.
- The device driver is automatically upgraded to a new version along with the up gradation of the Design software.
- User is given the option to clear the temporary files and settings to clear the registry entries related to the product during installation procedure (This feature is internally handled through some scripts embedded in the installer for the better performance).
- The dependent Re-distributable packages are embedded within the setup file and extracted during installation.
- Downgrade of the installed version of the designer software is not allowed and can only be upgraded to a newer version. The user if need be can uninstall the new version and then install the older version.

Pre-requisites for PanelPilotACE Design Studio Application

The Panel Pilot ACE application is dependent on the Microsoft Visual C++ 2010 Re-distributable package. This will be automatically installed on the system if not already installed.

Upgrading the software

Upgrading the Software includes upgrading two components,

1. **Panel Pilot ACE Design Studio Application software:** The changes in design software and bug fixes will need to upgrade the design software.

   New release of the PanelPilotACE Design Studio software is provided with a new installer, which will upgrade the current installed software on the system to the new version. Every upgrade of the software includes the bug fixes for the older versions of the software.

2. **Panel Pilot ACE Device Software:** The changes in device components due to changes in the design software with modified features or new features added in the designer elements will need to upgrade the device software.

   New release of the PanelPilotACE Device software is available as *.ppsw file. To upgrade the device software follows these steps,

   - Run PanelPilotACE Design Studio application
   - Connect the PanelPilotACE Device
   - Once the device is recognized by the application , select upgrade device option in device configurator
   - Select the downloaded device software package (*.ppsw file) in the file dialogue.

There are different cases of upgrade,

1. Upgrade Both PanelPilotACE Design Studio and PanelPilotACE Device Software.
2. Upgrade only PanelPilotACE Design Studio.
3. Upgrade only PanelPilotACE Device Software.

Every new release of design software may not need an upgrade of device software. Every design software has a minimum compatible device software version supported. This minimum compatible version is changed only if new PanelPilotACE Device Software version is released.

Glossary

Term	Definition
.ppproj file	PanelPilotACE Design Studio project file
.pptemplate	PanelPilotACE Design Studio project template and element template files
XML	Extensible markup language

Reporting bugs